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THE DIAGNOSIS AND TREATMENT OF MAJOR INJURIES*

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The modern treatment of major and multiple injuries dates from the development of blood banks and the growing use of stored blood since the late 'thirties. During the past ten years at the Birmingham Accident Hospital we have shown that blood is lost to the same extent in civilian injuries as in war wounds, and these injuries often require large, sometimes very large, transfusions of blood during the resuscitation phase (Clarke and Fisher, 1956 ; Clarke, 1958).

Clinical observations reinforced by studies of the blood volume have helped us to estimate blood loss and transfusion needs, so that, from careful and repeated examination of the nature and extent of the local injuries in association with systemic signs of what is still loosely called shock, we can now often assess the amount of bleeding that has taken place and the probable further bleeding. We suggest that no fit young or middle-aged person should die from haemorrhage or shock following injury confined to the limbs, provided he reaches hospital alive within a short time of injury. This is in marked contrast to the expectation of survival for single severe open fractures or double closed fractures of the femur a couple of decades ago. The same applies to relatively straightforward trunk injuries and to many multiple injuries.

But even these moderate but potentially lethal lesions may urgently need active treatment as soon as the patient arrives in hospital. We are only beginning to realize what is required for the treatment of severe multiple injuries, especially when haemorrhage is complicated by cerebral damage or a major chest injury.

We are no longer concerned with "shock" in the abstract, nor are we helped by thinking in terms of irreversible shock. We are beginning to tackle the particular effects of a given set of injuries in a particular patient. The first effects concern the circulation, sometimes the respiratory apparatus. The first need is often an appreciation of the role of haemorrhage. Once bleeding and its effects can be controlled and an airway established we are in a position to diagnose and treat individual lesions and to prevent their complications and interacting systemic sequelae. But diagnosis itself can be difficult.

The complexity of some of these problems and the nature of the therapeutic advances that can be applied to them are illustrated by some of our successes. The nature and extent of the problem can be seen more clearly against the background of our failures.

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From 1947 to 1956, 845 deaths from injury, excluding burns, occurred in the Birmingham Accident Hospital (Table I). In the younger age groups the males predominated, but there were twice as many women as men over 75. From 1947 to 1950 the annual number of deaths rose, even in relation to the number of admissions, but percentages can be misleading. In fact, we were receiving a larger proportion of major injuries. From 1952 to 1956 the deaths were 0.2% of new patients, 1.4% of admissions, and 1.3% of in-patient operations. Road accidents accounted for 370, domestic and other falls for 346, industrial injuries for 64, and sports injury for only 1.

TABLE I.—*B.A.H. Deaths by Age and Sex* (1947-56)

	0–14	15–34	35–54	55–74	75–	Total
Male	32	99	103	141	99	474
Female	12	7	28	121	203	371
Total ..	44	106	131	262	302	845

Can such local figures be usefully related to national statistics ? The total deaths from injury for England and Wales by age groups for 1955 (Registrar-General, 1956) show a double peak: in the 'twenties and again for the elderly (Fig. 1). The females show the later peak alone ; the males show a minor peak for the aged, another for the youngsters, and a plateau between. The male pattern (Fig. 2) is largely accounted for by head injuries, trunk injuries, and fractured femurs in the elderly. In the females (Fig. 3) the peaks for head injuries and femurs coincide. The age distribution is clearly related to causative factors—motor vehicles for the men and falls in the elderly females (Fig. 4), the preponderance of the latter being due to the fact that women live longer rather than to their falling more easily.

There was a discrepancy between the national age distribution pattern and an average of the Accident Hospital deaths for 1951–5. This was due to the fact that we do not get all the accidents in the city, while some patients never reach hospital at all. The 1955 figures from the Birmingham coroner (Table II) showed

TABLE II.—*All Birmingham Accident Deaths* (1955)

	B.A.H.	Other Hospitals	Dead on Arrival
Shock, haemorrhage, multiple injuries	21	17	29
Head and brain injury	25	33	30
Pulmonary embolus, fractured femur, toxaemia, hypostatic pneumonia .	53	82	9
	99	132	68

that two-thirds of those with major injuries reached hospital alive, while older people with lesser but fatal injuries rarely die before reaching hospital.

This does not help us to see if our treatment is doing any good, and, in any case, the frequency and diversity of multiple injuries make the study of case mortality impossible or almost useless. Nevertheless, consideration of such figures suggests that we can usefully divide the deaths into three main groups for further analysis (Table III): (1) fractures of the femur, with a 3:1 ratio

TABLE III

	Male	Female
Fractures of femur	70	210
Other injuries, without brain damage	163	74
Head injuries	242	86

of women to men; (2) the remaining injuries, uncomplicated by brain damage; and (3) head injuries. Men predominate in the latter two groups, which can be usefully subdivided into three age groups—children under 15, those aged 15–54, and those of 55 and over.

Fractures of Femur

Deaths after fracture of the femur are the only section in which there is any uniform extent of injury, but even this is vitiated by variation in the state of health of the elderly. Mortality is related to age. During the past eight years at the Birmingham Accident Hospital, hospital mortality for fractures of the neck of the femur was 14.5% of 1,542 patients—174 of the deaths occurred in patients over the age of 75. These injuries constitute a major risk which will increase with the rise in average age of the community.

There were 12 deaths in patients under 65: 2 from pulmonary embolism, the rest from coexistent medical illness. Most of the patients over 65 who died were already ill, often bedridden, before injury. The most important cause of unexpected death is pulmonary embolism, and we are engaged with our pathologists in a study of the preventive role of modern anticoagulants.

These patients do not die in the first few hours, but they do require early diagnosis, assessment, and treatment. Delay leads to decubitus ulcers, bronchopneumonia, and a host of other complications. Careful but not leisurely preparation for surgery is indicated in most hip fractures in the elderly. The anaemic and the major trochanteric fractures *always*, the median fractures treated surgically *often*, warrant transfusion. The primary need is for orthopaedic care and medical supervision. At first these are problems for a traumatic unit; their subsequent disposal requires the co-operation of geriatric and welfare services.

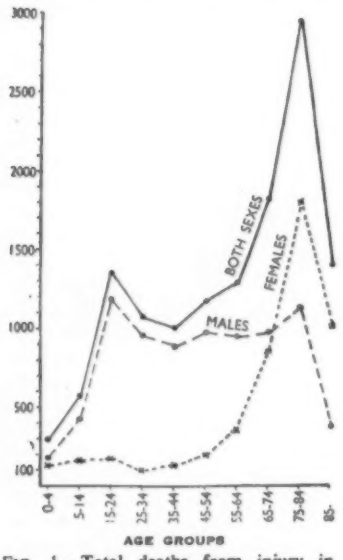

FIG. 1.—Total deaths from injury in 1955. England and Wales.

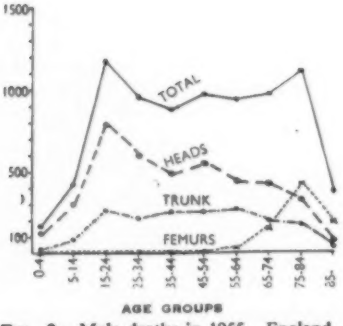

FIG. 2.—Male deaths in 1955. England and Wales.

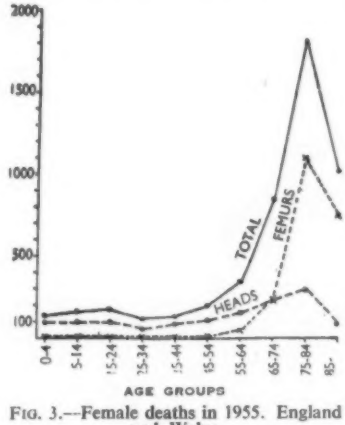

FIG. 3.—Female deaths in 1955. England and Wales.

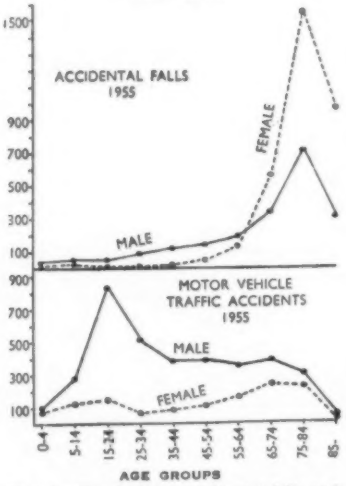

FIG. 4.—Deaths from accidental falls and from motor vehicle traffic accidents in 1955.

Other Injuries Uncomplicated by Brain Damage

The next main subdivision is the "others" (non-femur and non-head injuries) with a total of 237 deaths—126 from road accidents. The younger adults are the most convenient to study because of their relative freedom from previous illness, but most of the lessons apply equally to the children and old people.

These cases may be further subdivided: first, minor and moderate injuries, usually localized, with no failure of resuscitation; and second, death from a specific complication. The majority of the 19 deaths can be regarded as accidents of treatment or errors of judgment. They include two more or less pure anaesthetic deaths (three in all among 60,000 anaesthetics), and one each from A.T.S., tetanus, fat embolism, and gas gangrene. In 10 years one patient died from an incompatible transfusion. There were four cases of pulmonary embolus in this subgroup.

About two-thirds of the deaths in patients aged from 15 to 54 without head injuries had severe primary haemorrhage, major multiple injuries, or both. Many of them appeared at the time to be hopeless, but reappraisal in the light of further experience suggests that the majority did not have lesions that were

inevitably lethal and that a sufficiently accurate diagnosis could have been made in time to start treatment with some hope of success.

Ten years ago five bottles of blood constituted a largish transfusion. To-day we have many people alive who required 12 to 20 bottles. But once we come to deal with this order of haemorrhage and injury, treatment is complicated either by the apparent inaccessibility of continued bleeding or by injury to vital organs. Sometimes it is just a question of more accurate observation, a more exact primary diagnosis.

Case 1.—A 50-year-old man involved in a road accident reached hospital 12 minutes later "gravely shocked," restless, and irritable, with severe fractures of the pelvis and both femurs. Transfusion was ineffectual and he died 45 minutes later. Necropsy revealed a 3-in. (7.5-cm.) laceration behind the knee dividing the popliteal vessels, and *air embolism*. He had been stripped of his blood-stained clothing and no blood was seen near his knee.

Such patients may not benefit from the disturbance, but they require detailed examination. It is also important to make sure that all relevant information is obtained from those on the site or who bring patients to hospital.

Case 2.—A man aged 43—blown up by gunpowder—had both hands blown off, burns of the face, an open fracture of the leg, a deep wound of the thigh, and numerous lacerations. Half an hour after injury his pulse was 108, blood pressure 95/75. A plasma drip was started. 30 minutes later his blood pressure was unobtainable. He was given another bottle of plasma and a bottle of blood. The systolic blood pressure hovered between 40 and 80 while he received five bottles of blood and six of plasma during the next 20 hours. He became restless and died.

This was in 1947, and no one recognized that his evident injuries could account for a 40% initial bleed. Rapid transfusion would have made him fit for surgery, which in turn would have controlled the bleeding.

Case 3.—A 19-year-old lad was struck in the abdomen by a packing-case. At hospital 15 minutes later he was pale, blood pressure 70/0, with air hunger, a laceration of the neck, a tender pelvis, and poor circulation to the legs. He was given six bottles of blood in 1¼ hours, 10 in 2½ hours, 15 altogether in 3½ hours. He died seven hours after admission. At necropsy there was no evidence of brain damage, but a severe fracture of the pelvis, and several pints of blood in the abdomen in addition to the pelvic haematoma.

This patient died from haemorrhage despite what was probably a quantitatively adequate transfusion. On clinical grounds he had lost nearly half his blood volume on admission—say six bottles. Transfusion was fast enough to start off further bleeding before the blood volume was restored to normal. Thereafter the rate of transfusion trailed behind. We have enough experience now with similar patients to say that early and rapid transfusion can often restore the blood volume to a point where the circulation can be stabilized and haemorrhage controlled by surgery or natural processes. It is by no means rare for patients with fractures of the pelvis and associated injuries to require transfusion of their total blood volume or more, but often it must be given fast in the early stages, and this requires judgment. This "waste" of blood is often the price paid for survival.

Case 4.—A 30-year-old miner was crushed in the pit. Fractures of the pelvis, both femurs, and one tibia and fibula were diagnosed. There were no other injuries. He was considered fit to travel, but reached us without transfusion five hours later, to die within half an hour.

We do not know how often such delays are fatal, simply because most people are not aware that so extensive an injury can recover with modern treatment. Contrast these deaths with some patients receiving adequate transfusion in time.

Case 5.—A 46-year-old woman, injured in a road smash, sustained a severe fracture-dislocation of the pelvis and fractures of both bones of the forearm and a midshaft femur with gross displacement and swelling. She travelled 40 miles (64 km.) by ambulance. On admission her pulse was feeble and blood pressure unobtainable. After four bottles of blood quickly, and 10 altogether in three hours, her condition stabilized. She would have needed further transfusion if surgery had been required.

Case 6.—An 18-year-old airman was the first patient to reach us from the Sutton Coldfield train disaster. He had a fractured pelvis and clavicle and the sort of crushed open fracture of both legs that obviously made amputation inevitable. He was put in an ambulance and brought straight to the Birmingham Accident Hospital, arriving 45 minutes after the smash. His condition was almost desperate, but he improved with rapid transfusion. Laparotomy revealed a large retroperitoneal haematoma and both legs were amputated through the thigh. A primary transfusion of 12 bottles, well over his normal total blood volume, left him anaemic. He left hospital within three months.

Case 7.—A 21-year-old man was transferred 15 miles (24 km.) from another hospital after a road accident—he had received ¼ gr. (22 mg.) of morphine and a pint (0.5 litre) of blood in four hours. He had multiple right fractured ribs, severe lacerations, a middle-third fracture of the face, and a dislocated hip, with abdominal guarding and absent bowel sounds. His right chest was aspirated and he was transfused. At laparotomy profuse bleeding from tears of the liver was controlled by packing over gelatin foam. The hip was reduced and fixation of the mobile upper jaw deferred. Recovery was complicated by ileus, haemothorax, empyema, and subphrenic abscess, but he left hospital three months later. A year later he could do everything, including running and climbing. He received a primary transfusion of 17 pints (10 litres).

Occasionally we are faced with obvious major bleeding from a single artery such as the subclavian. An even more difficult problem is abdominal bleeding from major vessels, which is restrained by intra-abdominal pressure until released by anaesthesia or incision. We have failed at times to control bleeding from the superior mesenteric artery, a portal vein avulsed from the porta hepatis, intrathoracic bleeding from a torn diaphragm which extended into the vena cava, and complete rupture of renal and hepatic veins. We were transfusing too slowly, but the technical problem remains, although Hughes (1955), of the U.S. Army, experimented in Korea with an intra-aortic tourniquet consisting of a balloon on the end of a catheter run up the femoral artery.

Such problems verge on the insoluble, but are not at first distinguishable from other more readily soluble ones. Sudden bleeding can mimic head injury, by "violent restlessness" or "irritability" to coma. One patient whose violence preceded complete collapse recovered rapidly after transfusion and surgery. In any case, the presence of a head injury is no reason for not treating associated bleeding even when this is not likely to be immediately fatal.

In all, some 18 patients in the 15-54 age group died from major haemorrhage, mostly from the trunk, pelvis,

and abdomen. To these must be added 10 deaths following inadequate transfusion in elderly patients with moderate injuries; 8 after severe injuries to limbs, pelvis, and/or abdomen under 15, and 15 over 54.

Chest Injuries Without Cerebral Trauma

Another 10 patients under 15, 40 over 54, and 30 between 15 and 54 died with significant chest injuries without associated cerebral trauma—mostly from closed diffuse injury to the trunk, typically from road accidents. Some of these were unilateral, but the majority in the younger adults were bilateral, with additional damage to the juxtathoracic abdominal organs. In the less severe cases the chief mistake was an inadequate early appraisal of the extent of thoracic damage, with treatment too late or not at all. The more we see of major multiple injuries the more we find it difficult to make an early clinical diagnosis of all the important injuries. Early on, especially in the presence of collapse from bleeding or severe local pain, even without the added complications of unconsciousness from head injuries or anaesthesia from cord lesions, we have found that fractures of the pelvis, significant abdominal injury, multiple fractured ribs, and fractures of the spine can be present with no detectable signs or symptoms of any kind.

In the more severe injuries we have only just begun to appreciate the interrelation between the effects of oligaemia and the circulatory disturbances due to thoracic damage, even without major bleeding vessels or direct cardiac trauma.

Case 8.—A 42-year-old man was admitted 50 minutes after a car crash—cold, clammy, dyspnoeic, with no pulse or blood pressure. His right hip was dislocated. His abdomen became rigid and tender during transfusion. One hour after admission his blood pressure was 90/50. 12 oz. (340 ml.) of blood was aspirated from the right chest; later 8 oz. (227 ml.). He died four hours after admission. At necropsy there were several pints of blood in the peritoneal cavity from rupture of the liver, a large retrosternal haematoma, multiple fractures of the right ribs and a few on the left, with several pints of blood in each chest. Brain and lungs appeared to be intact.

Transfusion was slow in starting, but could hardly have succeeded without control of the chest injury.

Case 9.—A 24-year-old man had a motor-cycle accident. On admission his extremities were cold, he was pale and sweating, his blood pressure was 110/50 and pulse thin; he had pain in the chest, and was cyanosed and dyspnoeic. The chest moved equally. He had surgical emphysema of the right upper chest. Half an hour later his blood pressure was 62/30, and respiratory distress was increasing. The chest was needled high up on the right with decompression of a tension haemopneumothorax and improvement. With transfusion his blood pressure rose, but it fell soon afterwards in spite of 7 pints (4 litres) of blood. He died three hours after admission. At necropsy there were extensive fractured ribs on both sides and 1–2 pints (570–1,140 ml.) of blood in each cavity; the lungs were bruised but not torn. The abdomen contained 2–3 pints (1,140–1,700 ml.) of blood from a ruptured spleen.

He required an earlier transfusion and abdominal surgery which was not possible without a new approach to the chest lesion.

Case 10.—A boy aged 15 was crushed between a lorry and a wall. He was admitted to hospital half an hour after the injury and died 45 minutes later. On admission he was pale, pulseless, conscious, and restless. His breathing was bubbly and laboured, and he had fractures of the clavicles and upper ribs on both sides and surgical emphysema in the neck. Fifteen minutes after admission transfusion was started. Pulse 106, blood pressure 70/0. A second transfusion was started in the left arm. Forty minutes after admission a large swelling suddenly appeared over the right upper chest with spreading surgical emphysema. He died soon afterwards.

Transfusion was started early, but there was difficulty in keeping it running. More active measures for the chest condition were indicated.

Case 11.—A man aged 45 was run over by a car. He was admitted 40 minutes after the injury and died eight hours later. On admission he was unconscious, cold, pale, pulseless, with a dislocated right knee, compound fracture of the left leg, fractured left ribs, fractured right clavicle, stove-in right chest with paradoxical respiration. *X*-ray examination showed fractures of 3rd–9th left ribs and 3rd–10th right ribs, left pneumothorax, and right haemothorax. Two hours later, after 11 bottles of blood and 5 of plasma, his blood pressure had risen to 114/90, pulse 74. The chest was stabilized by traction, but he began to deteriorate. At necropsy the brain was normal; the right pleural cavity contained 1 pint (570 ml.) of blood, the left ½ pint (284 ml.), the abdomen 1½ pints (850 ml.) from laceration of the liver.

These and many other such apparently incurable injuries begin to fit into a pattern. The patients have lesions affecting one or both sides of the chest with abdominal damage usually confined to the liver and spleen, occasionally involving the suprarenals and kidney. No element of the complex appears in retrospect to be untreatable. They live long enough for a provisional diagnosis to be made; they may improve with time, transfusion, or aspiration of the chest, then they fade away.

The key to the situation is that they must be approached simultaneously from the point of view of their chest injuries and their bleeding. Their circulation cannot be stabilized unless the thoracic lesion is controlled.

The Boston surgeon E. D. Churchill, addressing the Rome Conference of Army Surgeons in 1944, described a change in emphasis in chest injuries between the first and second world wars. The first problem involved the pleura—the open chest, particularly at operation. We had moved on, he said, to focusing attention on the function of the lungs. This emphasis has developed so that we have learnt to suck out bronchi, remove air and blood from the pleural cavity, stabilize flapping segments of the chest wall, and use drugs to secure quieter respiration; more recently we have found that tracheotomy reduces the dead space, removes complications arising from spasm in the upper respiratory passages, and facilitates repeated aspiration of the lungs. We can get a dry lung that can carry out its normal gas exchange. If necessary the anaesthetists can take over the patient's breathing with help from new drugs. Which means that the more or less pure chest injury can be got under control.

When to the chest lesion is added major bleeding we must recognize that most of these factors also affect the pulmonary circulation. We advance from concentrating attention on the air passages to a recognition of the simple fact that *the left heart cannot put out what the right heart does not deliver, and that it is no use trying to restore the blood volume after bleeding if the blood cannot get through the lungs fast enough.*

Looked at simply, what are some of the factors in this situation which may impede the lesser circulation?

They are: (1) Obstruction in the pulmonary circulation, primarily arteriolar spasm, which may be due to (*a*) a reflex response to local trauma; (*b*) direct damage to the lung, with spasm and diminution of the capillary bed; (*c*) collapse of the lung with reduction of its vascular bed; (*d*) CO_2 build-up from paradoxical respiration or other mechanical inefficiency; and (*e*) some more general vasoconstrictive effect. (2) To which is added the effect of *increased* intrathoracic pressure that (*a*) impedes the venous return—the normal venous pressure is 6 to 8 cm. Hg in the I.V.C., 3 cm. Hg in the right auricle with a flow gradient—any obstruction decreases the venous return to the heart; (*b*) reflexly produces generalized venous constriction and dams the blood up on the venous side—25 cm. of water pressure in the pleural cavity halves the cardiac output (Funkhouser, 1957).

One way and another the various components of the injury affecting the chest wall and respiratory passages block transfusion so that it may even appear to be contraindicated. Everything needs to be done to restore the physiology of the lungs, not only for gaseous exchange but to enable blood to pass through and so on to the periphery, including the brain. Everything that leads to cerebral anoxia or ischaemia in turn increases the pulmonary disturbances. So we must do a tracheotomy early and keep the lungs dry, aspirate both pleural cavities, if necessary with apical and basal catheters, stabilize the flapping chest wall, relieve pain and spasm so breathing can be effective, sometimes with anaesthesia and controlled respiration, and all this even as a preliminary to a complete diagnosis.

If this is done early enough we will be able to replace the blood loss, and the patient will become fit enough to allow laparotomy, sometimes even thoracotomy as well.

Complex Chest Injuries

The effects of the modern treatment of localized unilateral chest injuries are already fully documented (Shefts, 1956; D'Abreu, 1958); but the cases I have in mind do not always get as far as the thoracic units, so here are two examples of more complex multiple injuries with chest components.

Case 12.—A man aged 37 was admitted to hospital directly after a car accident. He was pale, cold, sweating, with severe fractures of both jaws and an unstable depressed segment of the chest wall. He improved with rest alone, but later became restless, with obstructed respiration and vomited a pint (570 ml.) of fresh blood. His breathing became quieter with bronchial suction and morphine. Transfusion was started. After six bottles he was deteriorating in spite of a normal blood pressure, intercostal drainage, and tracheotomy. The chest was stabilized by traction on wires round the ribs. He gradually recovered consciousness from his head injury, the jaws being fixed on the tenth day. A clotted haemothorax needed decortication later, and a month after the accident he was noticed to have a fracture-dislocation of the hip which required open reduction. He was four months in hospital, back at a part-time light job in seven months, and back to full work within 18 months.

Case 13.—This case was even more complex and severe. A 32-year-old man was in a collision at 10 p.m. on April 16. He reached a local hospital in half an hour and was given gr. ¼ (16 mg.) of morphine. A team from the Accident Hospital reached him at 12.15 a.m. to find him stone cold, pale, and shivering, but conscious. His blood pressure was 60/0, pulse 136. After 6 pints (3.4 litres) of blood the blood pressure was 140/80. He was splinted and brought some 15 miles (24 km.) to Birmingham, where he was found to have a double fracture of the right femur, fracture of the right tibia and fibula, an open double fracture of the left tibia and fibula, fractures of five lower right ribs, extensive fractures of both sides of the pelvis, multiple lacerations, an open wound of the left elbow, and blood in the urine. At operation after 8 pints (4.5 litres) of blood he was found to have a ruptured spleen, torn outer coats of the transverse colon, and extensive bruising of the mesentery and stomach wall. Wounds were sutured and limbs splinted. A pint of blood (570 ml.) was aspirated from the chest. He became bubbly, so tracheotomy was added. After many adventures he is now well on the way to recovery.

Even here earlier tracheotomy was indicated, and anuria required careful biochemical handling for many days.

Head Injuries

The third section is the head injuries which so often complicate multiple injuries and add just one more set of major complications. The most significant new fact that emerges from a preliminary study of these deaths is the frequency with which they need early active treatment. Excluding all cases with injuries below the chin, there were 105 deaths between the ages of 15 and 54—21 had major bleeding from associated wounds: 16 fractured bases with bleeding from nose, ears, or mouth; 43 needed tracheotomy by our present standards; 14 had open fractures of the vault; 34 required operations on the skull; 3 had undiagnosed bleeding congenital aneurysms following definite histories of trauma; 6 had localized intracerebral haemorrhage. There were six extradural haemorrhages, with delay in operating in three and one missed at operation, and one subdural haemorrhage; four died from meningitis, one from pulmonary embolism. The records of only 18 showed no evidence of any treatable element requiring some action at an early stage.

FIG. 5.—Case 14.

Many subjects with head injuries might have been saved by more accurate early assessment. Here, and in many of the older patients and children, and especially those with associated and multiple injuries, the most important first step is to treat bleeding and perform tracheotomy whenever lung complications appear likely, *not* after they have developed. With early tracheotomy the state of consciousness in many cases of head injuries is transformed, so that it can be stated categorically that until this has been done the prognosis cannot be discussed (Maciver *et al.*, 1958). Deeply unconscious patients with head injuries have woken up after blood has been sucked out of their lungs. Tracheotomy will keep the lungs dry. With normal lung function they are better in every way, but require careful skilled nursing, tube feeding, and attention to secondary metabolic upsets.

Injuries in Children

Finally, here are the cases of two children.

Case 14.—A boy aged 7 had been run over and arrived at hospital in a grave condition with near complete amputation of the left leg (Fig. 5) and severe damage to the

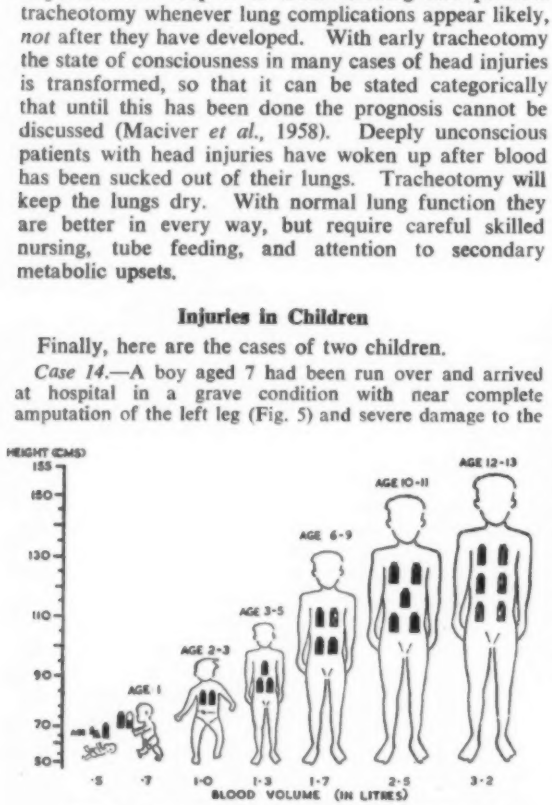

FIG. 6.—Chart showing blood volume of children.

thigh, a major wound of the right leg with a fracture of the femur, and signs of suspected abdominal injury. With transfusion the abdomen was explored, the left leg formally amputated, the severed part cleaned, and its skin stripped to graft the severe wound of the right leg. He was back in the ward within three hours of injury and the next day was fit. He was given a transfusion of five bottles—well over his normal blood volume.

Incidentally, a chart (Fig. 6) of children's blood volumes hangs in our shock room and at times can be a decisive aid to assessment.

Case 15.—A 6-months-old child was admitted to hospital with a swelling the size of an orange on his head. He was pale, cold, sweating, and died within 50 minutes apparently from simple bleeding.

At that age the blood volume is about a pint (0.5 l.) (Fig. 6). A 50% bleed would be about half a pint (0.25 l.). The relatively large size of the child's skull means that in fact the closed haematoma probably constituted a fatal haemorrhage.

Conclusion

The improvement in the treatment of serious and multiple injuries requires many facilities—for immediate transfusion, diagnosis, tracheotomy, suction, blood-volume studies, metabolic checks, radiology, not the least surgery—and these need a full team such as can be available only at a special centre. The provision of facilities for optimal care of the worst cases would improve the routine care of all the others. The problems of chest surgery, brain surgery, cardiac surgery, and severe poliomyelitis once seemed just as complex. To-day injuries are the biggest killers of all ages from 1 to 35. I am convinced that, whatever we may do to prevent them, accidents will remain with us. The surgery of trauma was the beginning of surgery. The day may come when it is all that is left. The full development of the services for the effectual treatment of injuries requires facilities and organization—it also requires experience and judgment. Finally, it presents a fascinating range of problems for combined clinical and physiological study. There is much to be done.

This paper is based on the collective work of a large team including clinicians and research workers at the Birmingham Accident Hospital. My thanks are due to the Medical Research Council Industrial Injuries and Burns Research Unit for their co-operation, and particularly to Dr. J. P. Bull, Dr. Elizabeth Topley, and Dr. J. W. L. Davies. Part of the work was undertaken with the aid of grants from the Medical Research Council, enabling assistance to be given by Dr. C. T. G. Flear, Dr. Mary R. Fisher, and Dr. I. G. Graber. Thanks are due to the Birmingham Regional Hospital Board for a grant for secretarial assistance which has enabled valuable help to be given by Miss Valerie Clarke. Thanks are also due to Dr. S. Sevitt for the use of necropsy reports and to my surgical and anaesthetic colleagues for assistance in recording and permission to use their case records, particularly to Mr. P. S. London and Mr. H. Proctor for permission to report Cases 12 and 13. With reference to the treatment of chest injuries I would like to state my appreciation of the value of the help given by Mr. A. L. d'Abreu and his unit.

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The contributors to the second edition of *British Gynaecological Practice*, edited by Aleck W. Bourne, F.R.C.S., F.R.C.O.G. (pp. 877, illustrated, 105s.; London, William Heinemann Medical Books Ltd., 1958), the gynaecological volume of *British Obstetric and Gynaecological Practice*, have thoroughly revised their work to bring it into line with advances in the comparatively short time since the first edition was published in 1954. The authors are from almost all the teaching centres in the country, and thus the book reflects British practice to-day. It is essentially clinical in its approach, with such description of pathology as is necessary for understanding diagnosis and treatment. The subjects chiefly revised are disorders of menstruation, by Professor T. N. A. Jeffcoate; the treatment of carcinoma of the cervix, by J. B. Blaikley; and the treatment of genital tuberculosis, by J. Stallworthy. The late Sir Charles Read's chapter on the corpus uteri has been revised by the editor and C. A. Simmons. The useful chapter on the medico-legal aspects of gynaecology has been brought up to date by John B. Gardner.

PLANNING FOR HEAD INJURIES*

BY

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Several factors in recent years have combined to arouse interest in future planning for the treatment of head injuries in this country. Peripheral hospitals are emphasizing the need for improved regional services based on the existing neurosurgical units or forming part of a more integrated plan for the accident services of the country as a whole.

The main concern is the rising accident rate. At a conservative estimate between 40,000 and 50,000 cases of head injuries require in-patient treatment in Great Britain every year. Apart from the large number of cases, head injuries now take high rank in the mortality from accidents of all kinds, and particularly from road accidents. Improved methods of treatment, the ready availability of antibiotics, and blood transfusion have lowered the mortality from other injuries, so that head injury now accounts for nearly three-quarters of all fatal road accidents. Surgeons realize that it is no longer possible, in busy centres at least, to commit themselves to take on accidents, including head injuries, as an appendage to the normal surgical working day. The surgery of trauma has become a major part of surgery of any general hospital and has to be arranged for accordingly.

The development of neurosurgery and the establishment of neurosurgical units has led to a more active management of the acute head injury. By the same token this specialization has led many general surgeons to seek transfer of head injuries to special centres. However, even when the surgeon is ready to continue treatment of these cases he may find himself handicapped by the limited resources of the building and of the nursing staff. The degree of observation and skilled nursing needed for the acute head injury may overstrain a nursing staff already taxed to the full by the ordinary surgical commitment of the hospital. Where there are large wards without adequate side-rooms, it becomes difficult and embarrassing at times to treat restless and confused patients. Neurosurgical units are now accustomed to receive frequent requests from other hospitals to take over the management of a patient with a head injury, not because of any particular surgical complication, but for the additional nursing facilities which it is hoped the centre may be able to provide.

Neurosurgical Units

Until recent years the neurosurgical units in the country, because of the smallness of their numbers and their primary concern with brain tumours and the like, were unable to take a major part in head injury work. Depending on circumstances, the amount they were able to do varied from very little to accepting, so far as possible, selected cases from the periphery, which in most instances meant certain complications such as subacute subdural haematoma and cerebrospinal fluid rhinorrhoea. The majority of the complications which occurred in the first 48 hours after head injury remained in the care of the surgeons at the admitting hospital. In other areas, quite apart from shortage of beds, distance and transport were, and still can be, prohibitive factors. Thus, in the West Country, the distance from the nearest neurosurgical unit at Bristol may be over 150 miles, and in Scotland weather and roads combine to make transfer of patients hazardous during certain periods of the year.

In the last 10 years, however, neurosurgical units have entered much more into the management of head injuries, and, apart from the impetus given by the factors mentioned earlier, there has been an increase in the number of neurosurgical units and of neurosurgeons. Fig. 1 shows the present neurosurgical distribution in the country on the background of density of population. It can be seen also where further units are required. These developments have led to a much more equitable division of neurosurgical work, so that with a few exceptions waiting-lists are now smaller, and the general impression is that units are able to accept more head injuries, although still, in most instances, with insufficient beds and staff to assume anything like a full regional service. In Oxford the position is no different,

FIG. 1.—Distribution of neurosurgical centres. The numbers refer to the neurosurgeons at each centre, those in London being grouped geographically.

*Based on a paper read in the Section of Accident Surgery at the Annual Meeting of the British Medical Association, Birmingham, 1958.

for with the limited number of beds in the neurosurgical unit it would not be possible to treat other than very selected cases. Fortunately, however, there has been another development in this hospital—that is, an accident service which deals with head injuries—and it may help in the discussion on planning for head injuries in the future to describe briefly our methods and experience.

Head Injury Service in Oxford

For our present purposes there are two features of interest about the accident service. One is that because of local circumstances all the accidents in the city of Oxford and environs are admitted to it. These include all the head injuries requiring admission to hospital. The second feature is that all the head injuries come under neurosurgical care, and it is thus possible to discuss a series of unselected head injuries provided with full neurosurgical cover and ancillary services from the outset.

There are no "head injury beds" as such. The accident service has one main ward, which contains 25 beds for male patients, together with a cubicled annexe of six beds, each equipped with suction and oxygen. This annexe has additional nursing staff, and to these beds are admitted patients of either sex who require resuscitation after injury or special care. Other beds are provided in one of the female wards and also in the children's ward, to give a total complement of 60 beds. (This arrangement would be improved further if all the accident service beds could be grouped together.) Unconscious patients are admitted to the annexe and, after the acute stage is over, go to the main wards, where the less severe head injuries are admitted direct.

From the point of view of head injury there are at least three major advantages of treatment within the compass of an accident service. The first advantage, and the main one, illustrates a basic tenet in planning for trauma—that is, the need to plan for patients who have sustained accidents, and not only for particular injuries. Modern accidents mean that there are patients with multiple injuries. A person may injure not only his head but his chest and femur as well. The Table shows

Other Injuries Sustained by 821 *Patients with Head Injuries, All Direct Admissions.* 269 *Patients Sustained* 383 *Other Injuries, an Incidence of* 32.7%

Injury				Total
Fractures				332
Face	Malar only	50		
	Nasal bones only	20	107	
	Maxillae	37		
Upper limb	Clavicle	40		
	Shoulder	14		
	Humerus	6	108	
	Forearm and wrist	35		
	Hand	13		
Lower limb	Pelvis	15		
	Femur	17		
	Knee	6	75	
	Leg	32		
	Foot	5		
Spine	Body	15		
	Processes	10	25	
Thorax	Ribs only		17	
Chest (12 with rib fracture)				13
Abdomen				8
Spinal cord and peripheral nerves, without fracture				8
Eyes				7
Major facial lacerations and soft-tissue injuries				15

an analysis of a series of unselected head injuries where no less than 32% of patients had injuries elsewhere in addition. In the accident service at Oxford, although every patient admitted is under the immediate care of one of the orthopaedic surgeons or the neurosurgeon, there is also available a 24-hour service from the chest, dental, and plastic units, and from the general surgeons for abdominal injuries. Within such a system the priorities for the treatment of patients with multiple injuries can be readily arranged and appropriate treatment given. Special units are here to stay, but in treating trauma the closest liaison must be maintained. The incidence of multiple injuries is rising, and these cases now play a not inconsiderable part in the mortality rate after head injury.

The second advantage of an accident service is that a ward devoted solely to accidents brings with it an elasticity in bed occupancy not met with in any other department. The turnover is considerable, and with the very varying demands it is much easier to arrange for emergencies.

A third advantage of treating head injuries within an accident service came to light when a large number of these cases were treated. It was found that the

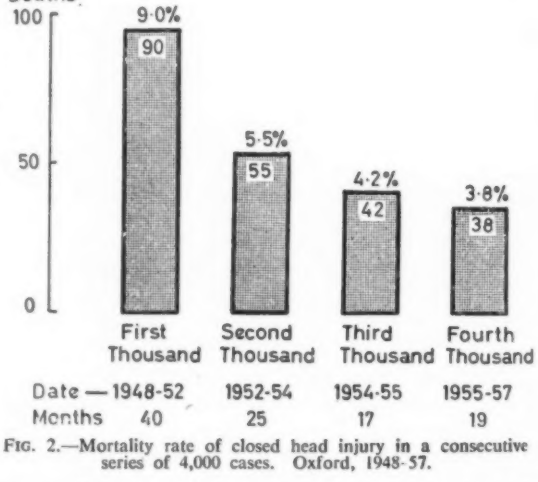

FIG. 2.—Mortality rate of closed head injury in a consecutive series of 4,000 cases. Oxford, 1948-57.

uncomplicated head injury did well in the atmosphere of a general accident ward and that such a ward, with its majority of young patients who, apart from their injuries, were otherwise healthy and full of life, was the right atmosphere in which a patient after cerebral concussion could gain confidence for the future. For these cases it compared favourably with the more sombre atmosphere of a neurosurgical ward. In planning one tends to concentrate on the severe cases, but it should not be overlooked that with head injuries one is dealing with a condition which should have at least a 90% chance of survival. Moreover, 80% of the patients have less severe degrees of head injury, and most of them may be expected, with adequate care and rehabilitation, to return to their previous work with little or no disability. Indeed, from an economic standpoint these latter patients are the more important.

The results of management of 4,000 consecutive head injuries within the accident service in the years 1948 to 1957 are summarized in Fig. 2. There was an average mortality rate of about 5%.

Regional Service

In addition to treating all head injuries admitted directly from the immediate area, a regional service has also been developed. Surgeons at other hospitals in the region discuss management over the telephone or request transfer of selected patients. Where transfer is

not appropriate, a neurosurgeon has gone to the hospital, but with the ready communication in this region transfer has in most cases been the better solution. Where there is a real urgency patients can reach this hospital quickly and be operated on at once if need be. A small operation trolley is ready night and day, so that exploration can be immediate. In this way over 500 patients with major head injuries in the region have been transferred over the past 10 years. In about one-third of the cases the reasons for transfer were suspected cerebral compression, which was proved in just over half of them ; compound fractures of the skull accounted for one-third ; and major head injuries with special features for the remaining third. An analysis of the first 250 patients so transferred showed a mortality rate in this major group of only 12.2%.

These figures demonstrate again what was shown in war injuries, that as a group head-injury patients travel well. Their aftercare is often as important as any emergency operation required ; moreover, in some patients the full range of ancillary investigations may be needed for their treatment. There are therefore cogent reasons for advising transfer of a patient to the centre, wherever this is practicable, if the maximum benefit is to result from skilled help. For treatment to be effective a decision to transfer has to be made sooner rather than later, beds have to be available, and the hospitals must have ambulances at immediate call. Advice on the care of the unconscious patient during transport, and in particular the management of the airway, has been described elsewhere.

In the past few years we have investigated, in conjunction with the Army neurosurgical unit at Wheatley, Oxfordshire, the possibilities of a helicopter service for head injuries. It is possible to transfer unconscious patients safely with full nursing attendance and care, including the availability of oxygen and suction. Several patients have now been transferred by helicopter from all parts of the country, and it is surely a part solution for selected cases otherwise isolated from a main centre. I understand that the present cost is about £40 an hour.

Training

Grouping of head injuries at special centres or accident services provides opportunities for undergraduate and postgraduate teaching. The junior housemen attached to the accident service at Oxford take their turn in looking after head-injury cases and gain experience in their management. Students during their dressership on the service have a series of teaching rounds on head injuries. Most encouragingly, in recent years consultant surgeons from other hospitals in the region, by arrangement with the Regional Hospital Board and the Board of Governors, have joined the unit at Oxford for varying periods to gain further experience for the management of head injuries in their own hospitals. This arrangement has also improved the liaison between surgeons at the centre and at the periphery, an invaluable factor when dealing with emergencies and deciding on the wisdom or otherwise of transferring patients.

Discussion

From these observations it seems permissible to draw a few conclusions. There would appear to be a good case to plan head injuries as a regional service based on the neurosurgical unit within or in close association with a major accident service. We will shortly be reaching the time when with some modest adjustments it will be possible for neurosurgical units to take on, in addition to their present commitments, the management of the severer head injuries in their regions, along the lines that have been set out. It must be possible for the peripheral hospitals to transfer quickly and efficiently patients about whom they are worried, and, in order to keep the system running, to receive them back as soon as any specialist treatment or observation is finished. There may also be advantages if a few neurosurgical units in the country could admit all head injuries in their immediate area, both for training purposes and in order to obtain a better overall picture of management and progress. Certainly postgraduate facilities should be arranged for surgeons and nurses from peripheral hospitals, and it should also be noted that visits from the centre to the periphery will help to cement the liaison that is essential.

It should be noted that the regional arrangements would apply to selected cases. There are several reasons why it is not only impracticable but undesirable that all head injuries should be transferred to special centres throughout the country. 80% of these patients will, with ordinary surgical supervision and nursing management, make an uninterrupted recovery. To transfer such patients is not only unnecessary but extremely expensive, both to the Health Service and to the relatives and friends who have to travel long distances to see them. Moreover, the speed of their recovery may be hindered by their being so far from home. It is also clear that some patients would suffer by a routine policy of transfer. For example, some of those with multiple injuries are unsuitable for transfer. No one soon after an accident can fully assess with accuracy all the injuries sustained by a patient, and major injuries to other parts of the body may easily be overlooked, particularly in the setting of a major head injury. A policy of early routine transfer would certainly include some patients who would be better rested, treated for shock, and fully evaluated. There is also the occasional case of rapid cerebral compression, where operation to be effective at all has to be immediate. That there are contraindications to transfer is not to suggest that they apply to many cases, for they do not ; but their existence emphasizes that any planning must take cognizance of the fact that arrangements have to be made for the treatment of a group of patients who of necessity must remain and be treated at the area hospital. Moreover, nursing of the unconscious patient should not of itself be a reason for his transfer to a neurosurgical or head injury unit.

Arrangements for dealing with accidents in any particular locality will rightly depend on local circumstances, but the present haphazard scheme of admitting accidents to any hospital in the county and city is uneconomic and inefficient. Not every hospital can be equipped with the 24-hour nursing and resident medical staff to cope properly with accidents. What is needed is an arrangement in each area to decide where major accidents—and these will include major head injuries—should be concentrated. At these designated hospitals there should be an organization for accident work which would include not only the staff and equipment but surgical wards and side wards with facilities for nursing the unconscious patient and those

requiring resuscitation. These hospitals would work in close co-operation with the special units—chest, plastic, neurosurgical—in the region, which should if possible be grouped together, and thus provide complete accident cover.

It has been suggested that the treatment of head injuries could be planned by opening up numerous "sub-areas" of neurosurgery, where a lone neurosurgeon with limited facilities would work. This suggestion still ignores the simple fact that accidents go to the nearest hospital, and, although it is essential that in the future this scheme should be streamlined further and hospitals be selected for major accident work, any organization must take into account the treatment of patients in hospitals to which they are first admitted. Specialist services, and particularly those of neurosurgery, are far better concentrated, and it is wiser to have several neurosurgeons in one centre with full ancillary services, providing between them an efficient 24-hour service, than to have individuals distributed throughout a region.

The peripheral hospitals, however, are not concerned only with the treatment and disposal of cases of major head injury. How essential is it to admit patients with minor degrees of concussion to hospital? And can beds be saved in this way? Our experience is that this work, although undramatic, is most valuable. To admit patients with minor degrees of concussion allows one to diagnose early the case that develops such a complication as an extradural clot, and this period of observation can also be properly used to determine the pattern and speed of the patient's subsequent progress. A short rehabilitation programme during the two or three days' observation is a major factor in the prevention of the post-concussional syndrome. It has for some years been our policy to follow up nearly all our patients until they have become symptom-free and have returned to work. It has been found that the number of cases of post-concussional syndrome arising among the in-patients is very small, but many more examples are seen in patients who, because of the mildness of their injury, have not been admitted to hospital. Quite apart from the surgical potentialities, the admission of these patients, short of wasting beds, results in a very considerable economic saving to the country in weeks off work and helps to restore them to health more quickly.

Finally, one should reiterate that head injuries constitute only one facet of the accident services of this country. A good deal has been heard lately of the need to plan for occasional national disasters such as railway accidents, but a more urgent problem is the treatment of the hundreds of daily accidents on our roads and in our homes.

Both problems can be solved if in every region an efficient accident service is planned, based on area hospitals, each having an accident service that serves also a group of smaller peripheral hospitals with which they work in concert. Special units would be grouped around a main accident service at the centre. Once such a system is established, it can deal with most situations. In the Radcliffe we had experience of this at the time of the Didcot rail disaster in 1955. It was found quite possible to provide additional beds in the hospital quickly by sending some patients home and transferring others. Thus it required no alteration in the system of the accident service to deal with the 54 casualties admitted. A week-end road disaster in which 10 or more people are involved and arrive in hospital together is unhappily a common occurrence in all major hospitals, and a plan that deals with this quickly and efficiently can be readily expanded. Better hospital facilities are required, but much can be done by harnessing our existing resources. A good deal of what is required at this stage can come from organization within the profession.

THE CARDIAC MURMUR IN RELATION TO SYMPTOMS IN THE NEWBORN

BY

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During the first few hours of life a cardiac murmur is often heard in the newborn baby. The murmur increases in intensity towards the end of systole, sometimes continuing through the second sound. It has been attributed to blood flow through a persistent ductus arteriosus (Burnard, 1958). This paper describes the relationship between the presence of this murmur, a previous history of asphyxia, and the maturity and the clinical condition of the baby. Both asphyxia and dyspnoea were associated with a higher incidence of the murmur, particularly in premature infants.

Materials and Methods

Murmurs were identified by auscultation and recorded with a phonocardiograph as previously described (Burnard, 1958). Asphyxia was regarded as being present when there was a delay of three minutes or more in establishing normal breathing after birth, or, in a few instances, when there was severe foetal distress (even though normal breathing began within three minutes of delivery).

The mature babies were nursed in cots at a room temperature of approximately 70° F. (21.1° C.); extra warmth was applied in a bassinet heated with electric light bulbs. Blood pressure was measured with a 1-in. (2.5-cm.) cuff, both by palpation and the flush method. The premature babies were nursed in incubators that were maintained at 85° F. (29.5° C.) for babies over 4½ lb. (2,040 g.) and 90° F. (32.2° C.) for those weighing less, and were supplied with oxygen in varying concentrations.

Dyspnoea here refers to rates above 40 per minute in full-term and 50 in premature babies who have been at rest for a minute or longer, as well as to grunting laboured breathing, even though the rate is no higher than 40. A respiratory rate of 40 a minute is normal for healthy infants (Smith, 1951); and Miller and Conklin (1955) point out that the same is true after the first hour in premature babies when they are well. There is a subjective element in the clinical assessment of dyspnoea, and it was found difficult to draw a sharp line between respiratory embarrassment and normal breathing as a baby recovered.

Mature and Healthy Babies

In 69 normal babies who were nursed in their cots, without extra warmth, the crescendo systolic murmur developed in 4 (6%) between two and six hours after birth. Twenty-two babies were kept warm as described

above, and eight (36%) of these developed the murmur within the same time—a significantly higher proportion. One of the latter, at a rectal temperature of 98° F. (36.7° C.), became very breathless; this baby improved over a three-hour period as its temperature fell to 94° F. (34.4° C.) and during this time the murmur disappeared. The temperatures reached by the babies in warmed cots varied considerably, partly because after the babies had spent a variable period in the labour room wrapped in a towel their temperatures were very different on arrival in the nursery. The distribution of rectal temperatures in warmed babies who had the murmur fell about the mean for all warmed babies (Fig. 1). As some reached temperatures well above the mean without developing the murmur, factors other than the temperature must also have determined the presence or absence of this crescendo systolic murmur.

Warming increased the incidence of all types of murmur in the newborn baby. Most warmed babies developed murmurs in the second to fourth hour after birth, a few in the fourth to eighth hour, and none after

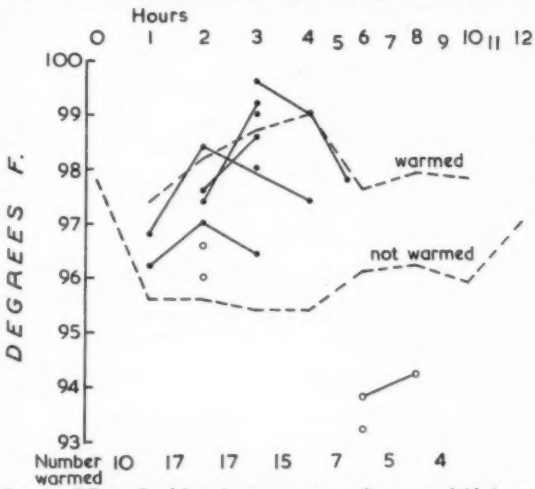

FIG. 1.—Effect of raising the temperature after normal birth at term. Broken lines: upper, mean temperature of 22 babies when warmed; lower, mean temperature of 69 babies, unwarmed and with no murmur. ●=Crescendo systolic murmur in 8 warmed babies. O=Crescendo systolic murmur in 4 unwarmed babies. Duration of murmur less than one hour except when continuous line joins successive observations on the same baby.

that (Table I). The ejection murmurs of early systole have not been included in the table. The pansystolic and diastolic murmurs have already been described (Burnard, 1958), and, while an exact basis for comparison is not available, these murmurs were certainly less common in unwarmed babies.

After asphyxia at birth the incidence of the crescendo systolic murmur in 41 babies was 25 (61%). They were nursed in their cots without extra warmth; though some were slightly cyanosed no oxygen was considered necessary in any of them, and all survived. Fig. 2 shows the mean temperatures at different intervals from birth in these babies. The difference between the means is significant ($P<0.05$) from the first to the sixth hour. Thus a fall in temperature favours the disappearance of the murmur when it develops after asphyxia at birth.

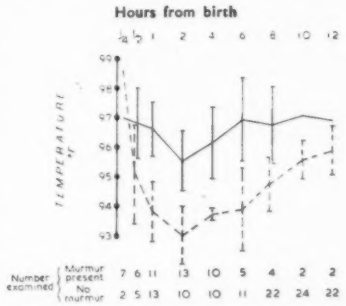

FIG. 2.—Relation of asphyxia and temperature to murmur. Mean temperatures at different intervals from birth in 41 mature babies who had suffered from asphyxia, and in 25 of whom a murmur was detected. Continuous line: murmur present. Broken line: murmur absent. The vertical lines are the 95% confidence limits of each mean.

Although the babies to whom these observations relate seemed to be well in natural conditions, apart from the brief administration of oxygen in the labour room, severe dyspnoea developed in a few babies after asphyxia at birth (see under next heading). Closer observation was therefore made on the breathing of 20 babies in whom there had been a three-minute delay before the establishment of normal respiration. In all of them the respiratory rate was found to exceed 40 a minute at the age of an hour, rising to between 60 and 90 in some, with grunting. The crescendo systolic murmur was heard in 15 (75%). None became seriously ill, but four were considered to need oxygen for 48 to 72 hours, and dyspnoea subsided slowly. The rest were well within 24 hours, and all survived.

Changes in blood pressure were not consistently related to the development or disappearance of the murmur in an individual baby, nor were there significant differences in pressure according to its presence or absence in different babies. It is, however, a difficult matter to measure the pressure accurately. The effect of late tying of the cord was examined in 10 babies who were kept for 10 minutes below the level of their mother's abdomen, but in only one did the murmur develop.

TABLE I.—*Total Incidence of Murmurs (Excluding Early or Mid-systolic) in 22 Warmed Babies*

Hours:	0–1	–2	–3	–4	–6	–8	–10
No. of babies warmed	10	17	17	15	7	5	4
Range of temperature °F.	95·2–101	96–102	96·6–102	96·4–102	95·2–99	96·2–101	97–99·2
Range of temperature °C.	35·1–38·3	35·6–38·9	35·9–38·9	35·8–38·9	35·1–37·2	35·7–38·3	36·1–37·3
Crescendo murmur (Fig. 1)	0	2	4	7	2	0	0
Diastolic murmur ..	0	6	5	1	0	1	0
Pansystolic ,, ..	0	1	3	2	1	0	0
Total murmurs ..		9	12	10	3	1	0

Breathless Full-term Babies

Mature babies sometimes die after a period of respiratory embarrassment, and then present the same necropsy findings of pulmonary haemorrhage, hyaline membrane formation, and, less commonly, frank pulmonary oedema, that are found in prematures. Observations have been made in 16 severely ill full-term babies. Physical signs changed with time and clinical condition, and murmurs came and went. Of these 16 babies, 11 (69%) had a crescendo systolic or a continuous murmur (Table II). Although all but three of them were severely asphyxiated at birth and were treated for this, the clinical illness in eight was an unexpected event

after a period during which they had been regarded as well. Thus one baby was sent to the nursery after an hour's treatment with oxygen in the labour room and was found in a collapsed state with a little blood at the mouth nine hours later.

TABLE II.—*Findings in 16 Breathless, Severely Ill Full-term Babies*

	Crescendo Systolic Murmur	Pansystolic Murmur	Continuous Murmur	No Murmur	Post-mortem Findings*
Died 24–72 hours (10 babies)	4	1	1	4	Atelectasis with congestion and areas of haemorrhage (3) Massive pulmonary haemorrhage (4) Pneumonia with gross congestion or haemorrhage (3)
Died 5–8 days (2 babies)			2		Cardiac hypertrophy,† pulmonary haemorrhage
Survived (4 babies)	2		2		

* Number of babies in parentheses.
† Heart weights 24 and 26 g.; birth weights, 5 lb. 14 oz. and 6 lb. (2,665 and 2,720 g.); expected heart weight for size of infant, 18 g. (Coppoletta and Wolbach, 1933.)

Dyspnoea was obvious in these babies and intense in several of them. The upper part of the sternum bulged forwards. Physical signs were absent from the lungs at first, and the air entry was good, but crepitations developed terminally. The heart rate was rapid and the second sound was usually loud; when it was soft there was no murmur except for a very short ejection noise. The liver was distinctly enlarged in five babies.

There was thus a close association between birth asphyxia and severe or fatal illness in 16 babies, with dyspnoea as the outstanding symptom and the crescendo systolic murmur as a concomitant finding.

Premature Babies

The most common murmur was the rough crescendo in late systole, which was seldom detected beyond the second sound. When it was heard after the second sound (Fig. 3) the resulting murmur was sometimes continuous on auscultation, although phonocardiographic records in the premature infant never showed a murmur continuous throughout the cardiac cycle like that of the adult persistent ductus arteriosus. Early and mid-systolic murmurs were also detected, but they are not discussed in this paper.

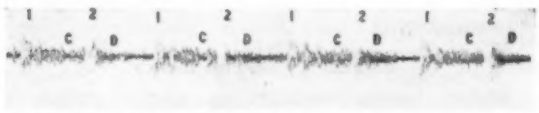

FIG. 3.—Premature, 8 hours of age. The murmur sounded continuous through both systole and diastole to the ear, but tracing fails to show it at the end of diastole. C=Crescendo systolic. D=Diastolic; 1 and 2, first and second heart sounds.

Incidence and Clinical Features

The crescendo systolic murmur was heard in 55 of 96 consecutive premature babies (57%). It was thus more often detected than in a similar series of full-term babies, in whom there was a total incidence of only 37%, although examination was more frequent (Burnard, 1958); it also lasted a longer time in premature babies. Among surviving premature babies it was found in 29 of 58 (50%), and among those who died in 26 of 38 (68%). The higher mortality in babies with the murmur is displayed when incidence is plotted according to age (Figs. 4 and 5). The incidence in surviving babies is probably in excess of that to be expected in a truly representative sample of prematures, since the distribution by weight of the babies studied (Table III) shows that the 4½–5½ lb. (2,040–2,495 g.) group was relatively small, as many babies of this weight were admitted direct to the general nursery, needing no special care.

Some features of the crescendo systolic murmur were more obvious in premature than in mature babies. Thus during the expiratory grunt that is common in dyspnoeic infants, but before actual phonation occurred, the murmur sometimes disappeared (Fig. 6). The effect of crying was the same, in that the murmur sometimes disappeared during the expiratory effort before the cry. In other babies the murmur was still heard before grunting or crying. Breathing also influenced the murmur. For example, in Fig. 7 the murmur is present after each inspiration, but absent during the second cardiac cycle after the last breath.

The murmur was hard to distinguish from the breath sounds during severe dyspnoea, though it could usually be made out by careful listening. Fig. 8 illustrates the murmur in a very breathless baby and also shows the relationship to respiration just mentioned, the amplitude being smaller after expiration.

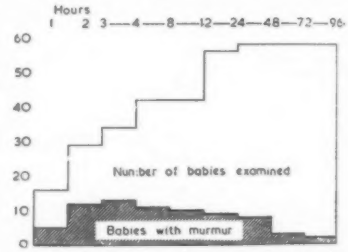

FIG. 4.—Incidence of murmur by age in 58 surviving babies.

The relationship to the supply of oxygen that has been noted by others (Zetterström, 1955) was clearly observed in two babies, the murmur returning with a reduction in the concentration and disappearing within a few hours of an increase.

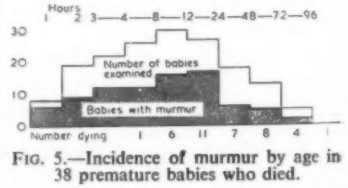

FIG. 5.—Incidence of murmur by age in 38 premature babies who died.

Among the babies who died a murmur which had disappeared as they improved not uncommonly returned as their condition became worse. It was also detected for the first time in some babies as they deteriorated.

In premature babies who suffered from dyspnoea the heart rate was raised and the second sound exaggerated and slapping in quality during the early phase of the illness, but there was no correlation between the presence of the crescendo systolic murmur and the quality of the second heart sound.

When the crescendo systolic murmur was first heard the lips and mouth were often somewhat dusky, and the hands and feet were a little blue for varying lengths of

TABLE III.—*Weights of Premature Babies*

Weight		Living	Died	Total
lb.	g.			
<2¼	<1,135	3	17	20
2¼–	1,135–	13	13	26
3–	1,587–	28	6	34
4¼–	2,040–	12	1	13
>5½	2,495	2	1	3
Total		58	38	96

time. The murmur lasted as long as four days, however, in babies who were pink all the time. When it reappeared in two babies as the oxygen concentration was lowered, their symptomatic change was an aggravation of dyspnoea rather than a change of colour.

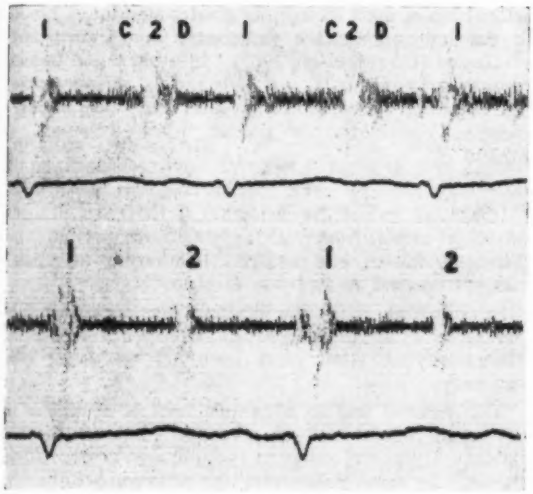

FIG. 6.—Relation of murmur to expiration with glottis closed. Premature, 36 hours of age. Symbols as in Fig. 3. E.C.G., lead I. Above: Murmur heard in late systole and early diastole. Below: Murmur absent during expiration with glottis closed, just before noisy grunt.

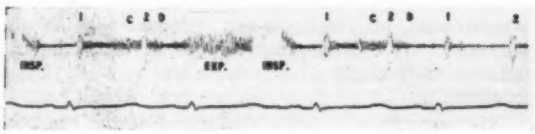

FIG. 7.—Relation to inspiration. Premature, 40 hours of age. Murmur heard intermittently. Tracing shows that it is well-marked in first heart beat after inspiration and absent in the second. Symbols as in Fig. 3. E.C.G., lead II.

FIG. 8.—Premature, 18 hours of age. Crescendo systolic murmur could be heard despite noisy tachypnoea (respirations, 110; heart, 150 a minute). Tracing shows the murmur, which goes through the second sound in the third heart beat. Its amplitude is greater after inspiration (second and third beats) than after expiration (fourth beat). Symbols as in Fig. 3. E.C.G., lead II; each jump in the E.C.G. baseline signals inspiration in the phonocardiogram (IN).

Relation to Symptoms and Temperature

The murmur was frequently present in premature babies who were breathless, whether or not they had suffered asphyxia for three minutes or more at birth (Table IV).

TABLE IV.—*Incidence of the Crescendo Systolic Murmur in Premature Babies Related to Birth Asphyxia and to Clinical State*

	Asphyxia	No Asphyxia
Total babies	44	52
No. with dyspnoea	42	42
,, ,, ,, and murmur	28	27
Proportion of dyspnoeic babies with murmur	67%	64%
No. with no dyspnoea and no murmur	2	10
Proportion of total with murmur	64%	54%

Fig. 9 shows the relation between the murmur, temperature, and dyspnoea in 53 surviving babies. During the first 24 hours after birth many babies had a rectal temperature of less than 95° F. (35° C.), and yet a large proportion were breathless and had a murmur. The duration of this murmur was often brief, even though dyspnoea persisted, and in some breathless babies no murmur was found despite quite frequent examination. The fall in temperature may have accounted for the diminishing incidence of the murmur with the passage of time, or for its absence in some of these babies, as in mature babies with lower temperatures after birth asphyxia.

The effect of a rise in temperature on the incidence of the murmur in this group of surviving premature babies can be illustrated by the following example. Twins weighing 4 lb. and 3 lb. 10 oz. (1,815 and 1,645 g.) were placed in the same incubator at the age of 4 hours, their temperatures being 92 and 91.6° F. (33.3

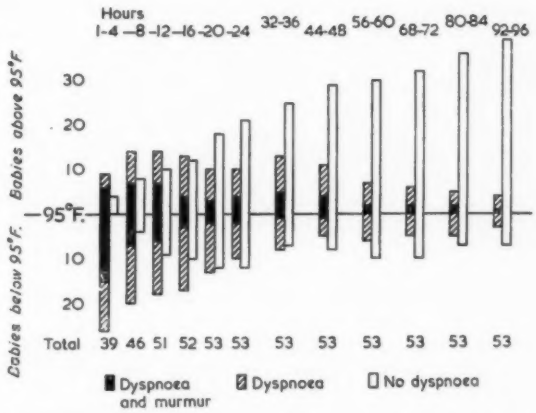

FIG. 9.—Incidence of murmur and dyspnoea related to rise in temperature and passage of time in 53 surviving premature babies. (The selection of 95° (35° C.) was arbitrary.)

and 33.1° C.) and respiratory rates 70 and 50 a minute. Three hours later the temperature of both babies was 98° F. (36.7° C.) and the respiratory rates 100 and 72. The first baby had no murmur; in the second there was a crescendo systolic murmur continuous through the second sound (Fig. 3). Ten hours later the second baby's temperature was 92° F. (33.3° C.), breathing was peaceful and remained so, and the murmur had gone. the first baby's temperature did not fall below 95.4° F. (35.2° C.), a crescendo systolic murmur developed, and there was considerable dyspnoea for 36 hours.

Body size had an important influence on temperature, and it was the smaller babies who had a temperature below 95° F. (35° C.) at the close of the observations (Fig. 9). In the first 24 hours, on the other hand, even the large and comparatively mature babies were mostly below 95° F. (35° C.) if they were breathless, and smaller ones were above 95° F. (35° C.) if they were well. In extremely dyspnoeic babies the work of breathing may have contributed to the exceptional instances of a relatively high temperature in the first 24 hours in the presence of dyspnoea. If this allowance is made it seems possible that symptomatic improvement, and not just the passage of time, determined the rise in temperature.

Discussion

The reasons for believing that the crescendo systolic murmur, whether continuous through the second sound or not, arises from left-to-right flow through a partly contracted ductus arteriosus have been given previously (Burnard, 1958). This murmur rarely occurred in normal babies (6% unwarmed; 36% warmed), but was often heard after birth asphyxia in mature babies (61%), and in premature babies it was found whether they had been asphyxiated at birth (64%) or not (54%).

Zetterström (1955) has suggested that the association of the murmur with asphyxia at birth means that asphyxia prevents the ductus closing. However, animal experiments suggest that under certain circumstances severe asphyxia, as well as oxygen, may actually cause the ductus to constrict (Born *et al.*, 1956). Moreover, Zetterström's hypothesis implies that the ductus arteriosus normally closes rapidly and completely in newborn babies. We now know that it may in fact remain partly open for many hours or days after birth, both in animals (Amoroso *et al.*, 1958) and in babies (James and Rowe, 1957; Adams and Lind, 1957).

Another possibility should therefore be considered—namely, that the presence or absence of a crescendo systolic murmur in the newborn baby is dependent upon the relative vascular resistances of the greater and lesser circulations. If the systemic vascular resistance increases, then, other things being equal, blood flow through the ductus arteriosus will increase: the faster the flow, the greater the likelihood of detecting a murmur. This idea is supported by the fluctuation in the murmur that was found in some premature babies in whom it faded on expiratory straining (Fig. 6), and was accentuated during inspiration (Figs. 7 and 8). Flow through the ductus arteriosus should diminish during straining with the glottis closed, as the rise in intrathoracic pressure tends to equalize pulmonary arterial and aortic pressures, while it should be increased by the greater ventricular output during inspiration.

The production of the murmur by extra warmth and its disappearance with the natural fall of temperature after asphyxia at birth (Burnard and Cross, 1958) are complementary observations, and would also fit the hypothesis that there may be changes in blood flow through the great vessels, consequent on temperature changes, which influence the genesis of the murmur. It appears that the most likely time for warming to show this effect is after the first hour (Table I), which is consistent with the need for a reduction in diameter of the ductus before a murmur is heard (Dawes *et al.*, 1955). The respiratory distress, as well as the effect on the murmur, that warming three babies produced should also be noted.

In relation to dyspnoea the clinical associations of the murmur were as follows. In the premature babies who recovered, dyspnoea was worse when the murmur was present. The murmur never occurred unless the clinical condition of the baby was serious. It was not always found in premature babies who died (Fig. 5), however, possibly because their temperatures were always low. The same generalizations were true of mature babies. Apart from the 16 who were gravely ill, however, dyspnoea in them was not so severe as in the prematures, and was indeed often overlooked until the 20 mature babies who had suffered asphyxia were watched more carefully.

Whether an increased blood flow from aorta to pulmonary artery through the ductus arteriosus affects the baby favourably or otherwise has yet to be shown. In lambs suffering asphyxia the increased shunt appears to be beneficial to the animal in permitting re-circulation through the lungs, with a rise in oxygen saturation of arterial blood, even though the greater amount of blood in the lungs diminishes pulmonary compliance and ventilation (Dawes, *et al.*, 1955). In asphyxiated babies respiratory difficulty is an outstanding phenomenon. The murmur is an indication that disturbed haemodynamic conditions are present when dyspnoea is evident.

Summary

In mature babies the incidence of the murmur that probably arises from left-to-right flow through the ductus arteriosus had a direct relationship to rectal temperature and to asphyxia at birth.

In premature babies the incidence was approximately the same as in mature babies after birth asphyxia. Prematurity of itself must have accounted for the similarity.

The murmur was an accompaniment of dyspnoea in premature babies and in severely breathless mature babies. Dyspnoea outlasted the murmur in premature babies. In some prematures the murmur returned if their clinical condition relapsed.

When mature babies had suffered birth asphyxia a raised respiratory rate was evident though they appeared healthy. The murmur was present in 75%.

A reduction in rectal temperature seemed to result in amelioration of dyspnoea and disappearance of the murmur. Conversely, warming three babies shortly after birth brought about dyspnoea as well as the murmur.

The suggestion is made that the murmur probably means an increase in flow through the ductus arteriosus above the rate present after normal birth.

The means whereby asphyxia causes an increase in flow through the ductus, and whether this in itself is harmful or not, are at present unknown.

I thank the obstetricians in charge of the maternity departments of the Paddington General and St. Mary's Hospitals for allowing observation of their patients; the nursing staff of the two departments; the Nuffield Institute of Medical Research for the loan of the phonocardiograph; and Dr. G. S. Dawes for help in preparing the text.

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The *Annual Review of Medicine*, vol. 9, 1958 (Annual Reviews, Inc., Palo Alto, Calif.; 530 pp., $7.50), contains reviews of the recent literature on 28 subjects ranging over the whole field of medicine, and includes a chapter on recent advances and future plans in Soviet medical research.

INTERPHALANGEAL JOINT INFECTIONS

BY

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Comparatively little attention has previously been paid to the uncommon but disabling condition of interphalangeal joint infection. Lowden (1955) stated that it was rare, and Riddell (1950), in a survey of 2,000 septic conditions of the hand, was able to describe only five cases, although Bentley (1950) considered that it was not uncommon following direct injury to the fingers, or as a complication of spread of infection to the joint from local sepsis. It is less rare in our experience than acute suppurative tenosynovitis, to which more attention is usually devoted in the literature of septic conditions of the hand.

The condition, despite its comparative rarity, merited further investigation, as it results in considerable disability, and usually requires prolonged hospital supervision and treatment. In addition, the recommended methods of treatment appeared to be drastic and diverse, Bunnell (1948) and Lowden (1955) favouring early amputation to reduce the total time of treatment, while Riddell (1950) and Bentley (1950) recommended arthrotomy. Bunnell (1948) stated that at an early stage interphalangeal joint infection may be aborted by repeated aspirations and instillations of penicillin (2,000–5,000 units per ml.). He noted that, although with this treatment advanced joint infection might subside, movement would be limited owing to damage; no cases were quoted.

Present Series

Material.—The following series of 18 cases of interphalangeal joint infection were collected during a survey in the septic hand clinic of the casualty department at the Birmingham General Hospital during the period October, 1956, to March, 1957. The clinic deals with some 5,000 new cases annually. Male and female cases were almost equally distributed, the largest proportion being concerned with heavy or light industry. The percentage incidence in this clinic, therefore, is approximately 0.7%, as compared with 0.25% found by Riddell (1950).

Aetiology. — The causes of infection of the interphalangeal joint could be placed in two well-defined groups: the 13 cases that resulted from a penetrating wound in the region of the joint, from lacerations of the skin on the dorsum, or from compound fractures of the terminal phalanx with skin loss over the joint; and the five cases that developed infection of the joint as a result of spread of adjacent infection, such as an abscess of the pulp space, paronychia, or dorsal furuncles.

Analysis of Joint Involved and Age and Sex Incidence.—Analysis of the cases shows that the terminal interphalangeal joint is most commonly involved (12 cases); six cases had involvement of the proximal interphalangeal joint, and there was only a single case of a metacarpo-phalangeal joint infection. The index finger was involved in nine cases, the middle finger in five, and the other digits in the remaining four.

A slightly higher incidence was found in the males—11 as compared with 7 females; in the series reported by Riddell (1950) all five cases occurred in males of working age. In such patients there is clearly a greater likelihood of penetrating injuries and infections of the fingers. The condition appeared to be definitely more common over the age of 35 years (11 patients), whilst only two of the other 7 were under the age of 20.

Clinical Features

Early in the investigation it became apparent that infections of the interphalangeal joints could be divided into two main groups: (1) early non-suppurative arthritis, and (2) late suppurative arthritis.

Early Non-suppurative Phase.—The chief features of this early phase seem to be pain and swelling well localized to the joint. Joint movement is extremely painful, and early in the progress of the lesion a well-marked laxity of the collateral ligaments of the joint occurs, producing the characteristic coarse grating on passive movement. On occasion there may be a discharging sinus—often following the track of the original penetrating injury—facilitating relatively easy diagnosis (Fig. 1). In interphalangeal joint infections which result through spread from adjacent infections such as abscess of the pulp space, paronychia, or dorsal furuncles, the primary lesion may mask the early infective signs. All cases of sepsis in the region of an interphalangeal joint should therefore be carefully examined in order to diagnose this early stage. In this connexion the tourniquet, of proved value in treatment of the septic hand, allows the easy recognition of deep communication with the joint, otherwise obscured by the blood and pus in the operative field. A radiograph at this stage reveals no definite lesion other than slight joint-narrowing and osteoporosis (Fig. 2).

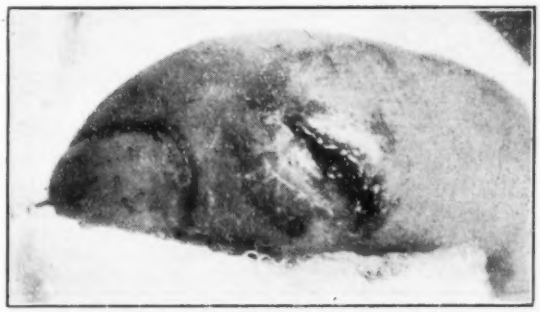

FIG. 1.—Terminal interphalangeal joint infection. The discharging sinus on the dorsum lies directly over the joint, which is grossly swollen and subluxated. This was one of the cases treated by nail traction.

FIG. 2.—Early terminal interphalangeal joint infection with osteoporosis. The great laxity of the joint capsule and collateral ligament is seen especially well in this case.

Suppurative Arthritis.—Untreated in the early phase, the condition progresses to the stage of established suppuration where diagnosis is clinically and radiologically obvious. The joint is grossly swollen, relatively painless, very unstable, and usually exudes pus or sero-sanguineous fluid from one or more discharging sinuses. The radiograph (Fig. 3) reveals varying amounts of joint destruction with small punctate or large irregular erosions of the articular surface, and occasionally a sequestrum along the sinus track.

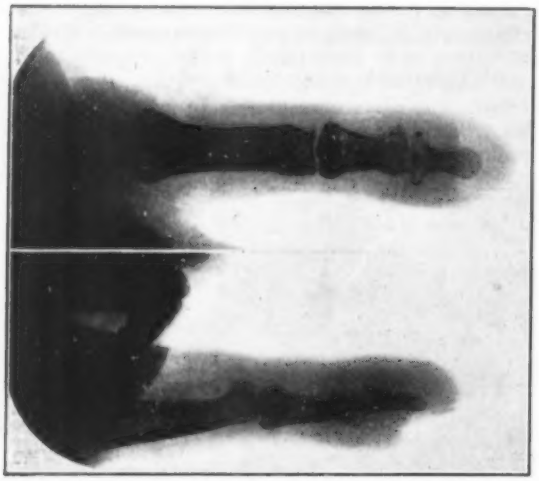

FIG. 3.—Late terminal interphalangeal joint infection with gross erosion, osteoporosis, and sequestra formation. Good function is obtained after conservative treatment.

Methods of Treatment

Of the 18 cases in the series, 15 were examples of the early non-suppurative type of infection and three were examples of the late suppurative stage.

Early Non-suppurative Arthritis

All the cases in this group were treated by systemic antibiotic therapy, immobilization, dry dressings, and, when necessary, local operation for the excision of slough. In addition one of the cases received a short course of short-wave diathermy, and in another the immobilization was combined with traction through the nail.

The antibiotic used was benethamine penicillin ("benapen"). This, the N-benzyl-β-phenylethylamine salt of benzylpenicillin, is available as a ready-prepared aqueous suspension containing 300,000 units per ml. It has been stated (Nelson *et al.*, 1954) that a single intramuscular injection will maintain a bacteriostatic level in the blood for at least three days. Accordingly, an intramuscular injection of 2 ml. of benethamine penicillin was given to all cases, and repeated, when required, according to response at appropriate intervals.

The affected finger was immobilized by a volar plaster-of-Paris slab, and the limb rested in a sling. The plaster was removed at intervals for inspection; otherwise the immobilization was maintained until recovery.

The type of dressing influences the rate of healing, the only dressing used in this series being dry sterile gauze, as is the normal practice with other septic conditions of the hand. The use of petroleum jelly gauze, we feel, is contraindicated, as it produces tissue maceration and further infection and delays healing.

The operative technique used in cases with obvious pus and slough was excision of slough and evacuation of pus, using a finger tourniquet with 2% lignocaine finger block.

In addition to the above standard treatment, four of the cases were treated by intra-articular injection of 500,000 units of crystalline penicillin, injected direct into the joint, using a lateral approach, the joint surfaces being separated either by distraction or by abduction.

Late Suppurative Cases

In this group are three cases which clinically and radiologically presented with established suppurative arthritis late in the progress of the condition.

Case 1.—Woman aged 59. Paronychia of right index finger of three week's duration, with involvement of the terminal interphalangeal joint, previously treated by own doctor with chlortetracycline. Treated by incision and drainage of paronychia combined with intra-articular injection of 500,000 units of crystalline penicillin into joint. In addition 2 ml. of benethamine penicillin given systemically, nail traction, and plaster-of-Paris immobilization. Nail traction discontinued after a few days because of pain, but immobilization in plaster maintained. Developed a sinus communicating with joint, which closed following spontaneous discharge of a sequestrum.

Case 2.—Woman aged 35. Referred to clinic by doctor. Large slough overlying terminal interphalangeal joint of left middle finger following an attempt to cauterize a wart on the dorsum. Clinically an obvious infection of the terminal interphalangeal joint with an overlying ulcer and slough and radiological evidence of osteitis of the terminal phalanx. Treated by removal of nail and slough, systemic penicillin, and immobilization in plaster-of-Paris, with later Thiersch graft to the skin defect on the dorsum of the joint. Patient discharged from the clinic, but returned two months later with persistent discharge. After spontaneous discharge of two small sequestra the condition improved.

Case 3.—Man aged 40 presented with a discharging sinus over dorsal aspect of terminal interphalangeal joint of right ring finger. Previously he had sustained severe burns of the right hand and fingers with scar healing, and already had a fibrous ankylosis of the interphalangeal joint. Treated by excision of slough, systemic penicillin, and prolonged immobilization in plaster-of-Paris.

Analysis of Results

Non-suppurative (15 cases).—A questionary sent to all patients two months after discharge from hospital produced the following results. (*a*) *Cases treated by systemic penicillin and immobilization.*—Eleven of these patients reported normal mobility of joint, no stiffness or pain, no interference with their working capacity, and no recurrence. They all assessed their end-result as good, although their total time of treatment varied from 4 to 46 days. (*b*) *Cases treated with systemic*

Results in the Suppurative Arthritis Group

	Case 1	Case 2	Case 3
Normal mobility of joint	Yes	No	No
Pain in joint	No	Yes	"
Stiffness of joint	"	"	Yes
Affecting working capacity	"	No	No
Recurrence	"	"	"
Total time of treatment (days)	76	71	77
End-result	Good	Poor	Good

Addendum to Case 3.—As noted in the case report, the affected joint had a fibrous ankylosis, and the end-result, reported as a stiff immobile joint, is thus accounted for. Actually the patient was satisfied with the result, which had restored the finger to the previous state.

penicillin, immobilization, and intra-articular penicillin.—Of the four patients in this group only two reported with normal mobility, no joint stiffness or pain, and no effect on their working capacity. They assessed their end-result as good. Their total time of treatment was 24 and 6 days. Two patients did not reply. Their times of treatment were 65 and 24 days.

Suppurative Arthritis.—The results obtained in this group are set out in the Table on the opposite page.

Organisms and Sensitivity

Ten of the cases were investigated bacteriologically (five were penicillin-sensitive and five penicillin-insensitive); the remaining eight had no bacteriological examination, either because they were cases of early non-suppurative arthritis or because by error a swab was omitted. The commonest organism was *Staphylococcus aureus.*

The mean total time of treatment correlated with penicillin sensitivity was: pencillin-sensitive cases, 36 days; pencillin-insensitive cases, 12 days; where no swab was taken, 24 days. We were unable to find any correlation between the length of treatment and the administration of penicillin.

Discussion

Previously, insufficient attention has been paid to the aetiology of interphalangeal joint infections. The recognition of two groups—those due to injuries in the joint region, and those complicating local sepsis—is thought to be important in the early diagnosis and treatment of these infections, as influencing the period of incapacity and ultimate restoration of function.

The relatively thin skin and poorly developed posterior capsule of the terminal interphalangeal joint, to which Lowden (1955) draws attention, probably accounts for the early involvement of the joint following lacerations of the dorsum. From a consideration of these factors, therefore, we recommend that systemic penicillin be given to all cases of hand sepsis, and especially to injuries in the region of the interphalangeal joint, to avert the later development of this disabling condition.

The total time of treatment in this series averaged 28 days. In this connexion Riddell (1950) remarked that the total period of disability could be attributed to delay in beginning treatment, delay in making the diagnosis, and delay in return to work, as physiotherapy was required for a long period. We also found that delay in treatment led to prolonged disability. In two of our late cases of suppurative arthritis there was a considerable delay before treatment was begun, and in the third there was previous fibrous ankylosis of the joint. Physiotherapy was not required in our cases during or after discharge from the septic hand clinic.

In this study we eventually came to believe that the treatment should be systemic penicillin, prolonged immobilization, and intra-articular penicillin. Nail traction was discontinued early in the investigation because it caused severe pain and rather frightening laxity of the collateral ligaments. We realize that the results appear equally good with or without intra-articular penicillin, implying that the essential parts of the treatment are systemic penicillin and immobilization. We believe, however, that the treatment of suppurative arthritis of these small joints should not differ in any way from that of any major joint. We have found this treatment to be successful and less drastic than methods previously recommended. However, as previously stressed, early recognition of the condition is important, before extensive destruction of joint cartilage and bone supervenes.

An analysis of the results of treatment in these early cases shows that in some 70% we have succeeded in obtaining a painless and mobile joint which has not interfered with the patients' working capacity and has caused no further trouble since discharge. Riddell (1950) in his series was able to show a relatively short stay in hospital, but the end-result of all cases was a fixed joint to a greater or less degree. Disability because of a stiff, painful, deformed finger may seriously interfere with a person's working capacity, and in our analysis of results particular attention has been paid to the restoration of normal working ability.

Summary

A series of 18 cases of infection of the interphalangeal joint are reported.

Stress is laid on the diagnosis of the early non-suppurative stage of the condition.

Treatment of the early non-suppurative stage and late suppurative stage is discussed, and an analysis of the results is presented.

The treatment advocated is systemic penicillin, intra-articular injection of penicillin, and prolonged immobilization.

The decision to undertake arthrotomy, or, rarely, amputation, should be delayed until conservative measures have been fully exploited.

We are grateful to Miss M. O. Chesney for the contact prints and to Mr. W. R. Walker for the photograph. This work was carried out with the help of a grant from the Endowment Research Fund of the United Birmingham Hospitals.

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To doctors, as to artists, the human hand has always been an object of special attention, for it may reveal much about its possessor's health, character, and, as Sherlock Holmes pointed out, occupation. A distinguished psychologist, the late Professor Géza Révész, of Amsterdam, in the course of a lifetime's study of human communication and sensory experience found that "there is scarcely a domain of social life in which the hand does not play a distinctive role." These words come from the preface to a book which first appeared in 1943 and is now published in an English translation by Professor John Cohen (Routledge and Kegan Paul, 21s.). In 138 pages the author ranges over recorded history and beyond into zoological comparisons, lightening his text with 37 illustrations, many of them striking and even bizarre illuminations of his theme. It is a scholarly work which delves into many curious byways of human behaviour and expression. The translation seems to be excellent.

SYMPATHECTOMY FOR HYPERTENSION

FOLLOW-UP OF 212 PATIENTS

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This paper sets out to describe and discuss the results of sympathectomy in 212 patients suffering from hypertension. The operations were performed during the period 1947 to 1953 inclusive. The follow-up has been conducted since 1950 by two senior medical registrars virtually independent of the surgeon. The assessments made were therefore unbiased by enthusiasm for a particular surgical method.

The blood-pressure readings given throughout the paper were obtained from the resting out-patient. The lowest diastolic reading indicative of hypertension was arbitrarily fixed at 110 mm. Hg. Pre-operative blood-pressure readings exceeded 120 nm. Hg in 80%, and 140 mm. Hg in 45%, of the patients. In 27% sympathectomy reduced the diastolic pressure by 20–50 mm. Hg and maintained it at this lower level. Changes in blood pressure are the simplest and most convenient measurements to use in judging the effect of treatment, and on this count the results in this series show considerable benefit; but when the more important subjective improvement is also considered, and the general well-being and the increasingly useful lives led by many of the patients for some years after the operation are realized, even though the initial fall in blood pressure may not have been maintained, then a more balanced view of the improvement after sympathectomy is obtained. Some of the recoveries have been dramatic, as, for example, that of a male telephone operator previously blind as a result of hypertensive encephalopathy, who could barely discern the figure of a man a few days after unilateral sympathectomy but 10 years later could still see to do full work, and whose blood pressure remained much reduced. Forty sympathectomies for hypertension have been performed since 1953, and the results continue to indicate that the method is of value.

Pre-operative Management and Selection

In an endeavour to find any of the known causes of hypertension, a full clinical assessment was made of every patient with special attention to any renal cause or evidence of phaeochromocytoma. For the purpose of comparison with the results published by other workers, and so that these results can be compared with other methods of treatment, the criteria of Wagener and Keith (1939) in grading the optic fundi 1 to 4, and the grouping of the patients 1 to 4 in the manner adopted by Palmer *et al.* (1948), are used. Additional special tests were found to be of no help in reaching a decision on the probable advantage or otherwise of employing sympathectomy.

The operation was performed on those patients whose diastolic blood pressure was raised to more than 110 mm. Hg, and whose symptoms were caused by hypertension, provided that they had not suffered a cardiac infarct or cerebral thrombosis during the past three months and the urea clearance was not less than 20%. All patients with grade 4 fundi, papilloedema, and exudates were subjected to operation unless the blood urea nitrogen was greater than 100 mg. per 100 ml.

Surgical Analysis

The extent of the sympathectomy used varied according to the recognized established procedures. (1) Grimson *et al.* (1953): the removal of all the thoracic and the upper three lumbar ganglia together with the splanchnic nerves and half the coeliac ganglion (7 bilateral cases and 1 unilateral). (2) Adson *et al.* (1936): the removal of the upper three lumbar ganglia and half the coeliac ganglion together with a short length of the great splanchnic nerve (39 bilateral and 21 unilateral). (3) Smithwick and Thompson (1953): the removal of the lower five thoracic and the upper three lumbar ganglia together with the splanchnic nerves and half the coeliac ganglion (82 bilateral and 17 unilateral). (4) Thoracic: the removal of the lower six to eight thoracic ganglia together with the splanchnic nerves (36 bilateral and 9 unilateral).

In general the more extensive procedures were used for the younger patients in whom symptoms were more evident, and the smaller operations for the older patients. Operations were restricted to one side in 48 patients because of their age or satisfactory symptomatic improvement, or because the disease was thought to be too advanced. Death within six weeks of the date of operation is regarded as an operative death, and this accounts for 4% of the patients; two of those who died had an unrecognized phaeochromocytoma.

The severe reduction in blood pressure which occurred for some days after sympathectomy in nearly all the patients produced remarkably little general trouble. One patient suffered colour blindness in one eye which was thought to be a bizarre effect of the post-operative fall in blood pressure. Except in the Adson procedure, the chest was always opened. The common complications of collapse of the contralateral lung and pleural effusion reacted favourably to standard treatment and in no instance persisted. With the thoracic approach post-operative pain was frequent; it appeared about the 10th day, and was felt mildly or severely not only over the wound but also over a large area below it and might last days or weeks. Such pain always disappeared when the other side was operated upon, and often did not occur on the second side. The pain was not the result of damage to an intercostal nerve, for it occurred in 40% of all sympathectomies, including many in which the surgical approach could not damage somatic nerves.

Postural hypotension was usual during the first few weeks after the second operation, was not altogether related to the persistent fall in blood pressure, and always resolved after a few months. Raynaud's phenomenon appeared in the hands of several patients whose upper thoracic ganglia had been spared; this was irrespective of the effect of the sympathectomy on the blood pressure. Although mostly a minor nuisance, it was severe enough in two patients to call for upper

thoracic ganglionectomy. Most males from whom the first lumbar ganglia had been removed were rendered impotent. Haematemesis occurred in four men after sympathectomy, but in each there had been evidence of a peptic ulcer before operation. In one of these patients hypertension was found when he presented with haematemesis, and some months after a bilateral Smithwick procedure had been done a duodenal ulcer perforated, showing the typical symptoms and signs, despite the removal of afferent paths for pain. Some dyspepsia recurred after the perforation had been sutured, and eventually partial gastrectomy was performed. Nine years after sympathectomy the patient was in full work and free of symptoms, although the reduction of blood pressure had not been maintained.

Statistics and Results

Table I shows that the majority of the sympathectomies were performed on patients in the fifth decade, and that there is a preponderance of women. Table II shows that the largest number of operations were performed for group 3 patients, and that the expectation of life is greater in women than in men. Of the 22 patients who did not survive the first year after operation, 18 were in group 4 and 4 in group 3. Of the 63 patients who died, cerebrovascular lesions, uraemia, and coronary thrombosis accounted for 43; the cause in the remainder is not known. Table III shows the effect of sympathectomy on the blood pressure after the operation, and in the large majority it would seem that the reduction in blood pressure is not maintained. Table IV shows that the changes in the optic fundi after sympathectomy are most notable in patients with grade 3 fundi.

TABLE I.—*Age and Sex Distribution*

Age in Years	Males	Females	Total
11–20	0	2	2
21–30	6	9	15
31–40	21	30	51
41–50	47	61	108
51–60	13	23	36
	87	125	212

TABLE II.—*Mortality in Relation to Sex and Pre-operative Group*

Group	Males		Females		Total No.	Mortality
	No.	Deaths	No.	Deaths		
1	13	1	42	1	55	4%
2	17	4	33	4	50	16%
3	42	21	35	7	77	36%
4	15	14	15	11	30	83%
Total	87	40	125	23	212	28%

TABLE III.—*Effect on Diastolic Pressure After 4–10 Years*

Group	Reduction in Diastolic Pressure			Total
	>30 mm. Hg	15–30 mm. Hg	<15 mm. Hg	
1	4	10	39	53
2	3	4	35	42
3	1	13	35	49
4	2	3	0	5
Total	10	30	109	149

TABLE IV.—*Post-operative Changes in the Optic Fundi*

Pre-operative Grade	No. of Cases	Post-operative Grade				Percentage Improved
		1	2	3	4	
1	85	76	9	0	0	
2	66	3	61	2	0	
3	31	3	19	8	1	70 } 49
4	30	1	5	2	22	27 }

Symptomatic Results. — Headache previous to sympathectomy was complained of by 90% of the patients and in almost all of them the operation brought relief; two-thirds lost their headache completely, and in the others it was less frequent or less severe. The relief of headache continued for a year or more, and in no instance did the headache return to its pre-operative severity. Dizziness before sympathectomy occurred in 50% of the patients and only 10% failed to improve after the operation; in half the relief was complete and in the others it was considerable; in 40% it was maintained. A large proportion of patients complaining of tinnitus gained symptomatic relief, but in no instance was breathlessness assuaged.

Discussion

Sympathectomy for hypertension carries a low mortality. In 376 operations performed on 212 patients there were nine deaths within six weeks of the operation. All these occurred in groups 3 and 4, and the selection of patients for operation had included 40 who were extremely ill.

The 10-year survival rate in this series is 66%, and the five-year rate 76%. Smithwick and Thompson (1953), Grimson *et al.* (1953), and Morrissey *et al.* (1953) report a five-year survival rate after sympathectomy of 81, 77, and 82% respectively. The group and sex ratio varies in these different series, but it is reasonable to claim a five-year survival after sympathectomy of 70–80%. This survival rate compares favourably with that reported by Palmer *et al.* (1948) in an untreated series. For the purposes of comparison of their series with the present one, patients aged more than 50 years have been omitted from the Palmer series in Table V, but the 36 aged more than 50 have been left in the present series. Yet, even so, the overall survival in the Palmer series is 49% and in the present series 70%. The large disparity cannot be explained by the variables within the groups or in sex distribution, and indicates that sympathectomy is of great assistance in prolonging life.

TABLE V.—*Mortality Compared with an Untreated Series*

Group	Palmer *et al.* (1948)		Present Series	
	No. of Cases	Mortality	No. of Cases	Mortality
1	68	16%	55	4%
2	35	43%	50	16%
3	80	69%	77	36%
4	45	93%	30	83%
Years' observation	Average, 8		4–10	

Reduction of the diastolic pressure by 15–45 mm. Hg after sympathectomy occurred in nearly all patients for some weeks or months, but in only 27% was a reduction of more than 15 mm. Hg maintained. It was found to be impossible to predict whether the fall in blood pressure after operation would be temporary or sustained. Even in the presence of gross degenerative changes, as for instance grade 3 or even grade 4 fundi, sympathectomy can achieve retrogression of these changes and cause a sustained fall of blood pressure.

Of the patients showing grade 3 fundi before sympathectomy, 70% improved, and of those showing grade 4, 27% improved. Death was not delayed many months in patients whose grade 4 fundi remained unchanged by the operation. When improvement in the fundi did occur it was rapid and sustained, even though the initial fall in blood pressure might not be maintained.

The changes in the fundi, the reduction of blood pressure, and the symptomatic relief do not necessarily bear any direct relationship to the extent of the sympathectomy performed, and, as this series progressed, Adson's operation became the usual procedure for patients over 45 years of age who had severe headache. When the effect of this limited sympathectomy was substantial the second side was not done.

Whatever the extent of the sympathectomy performed there was almost always a reduction of blood pressure for some months, and this temporary reduction may be of great importance in permitting hypertrophy of the arteriolar wall, so preventing the arteriolar necrosis of maligant hypertension.

In many hypertensive patients subjected to Adson's operation Raynaud's phenomenon developed in the hands, indicating that sympathectomy exerts a general effect. This general effect may partly explain the improvement in the optic fundus and the increased survival rate after sympathectomy independent of the persistent fall of blood pressure; it is a likely explanation of the dramatic relief of headache by sympathectomy.

The low operative mortality, the 76% five-year survival rate, the 66% 10-year survival rate, the 27% rate of sustained reduction in blood pressure, the 49% rate of improvement in the optic fundi in grades 3 and 4, and the high rate of symptomatic relief, all point to the justification of sympathectomy as a useful method of treatment for hypertension. The majority of patients returned to work after the operation, kept their jobs, and were able to forget about themselves and their disease for many years.

Summary

The results of sympathectomy for a period of 4 to 10 years after operation on 212 patients suffering from hypertension are recorded.

The operative mortality was 4%.

The survival rate of 76% for five years accords with other published records of patients treated by sympathectomy and is in favourable contrast with any published series of patients treated conservatively.

A sustained reduction of diastolic pressure of more than 20 mm. Hg occurred in 27%.

Retinal improvement occurred in 49% with severe changes, and when there was no improvement in advanced retinal degeneration death was not long delayed.

Symptomatic relief after sympathectomy was the rule.

Reduction of blood pressure, if only for a few months, may prevent malignant hypertension.

Sympathectomy in hypertension gives many patients an increased expectation of a full and active life.

We thank Professor P. R. Allison, who prompted us to treat patients with hypertension by sympathectomy; Mr. H. T. Simmons, of Manchester, who demonstrated his artistry in performing sympathectomy to us; Mr. G. W. Black for grading the fundi; Dr. J. R. H. Towers for making the follow-up in this way possible; and many colleagues who helped us during this period of rapid change in surgery and aftercare.

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NATURAL HISTORY OF THE PSYCHONEUROSES

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The natural history of the neuroses is a topic which has been little reported on, although its importance as a standard against which the efficacy of treatment can be assessed is only too obvious.

The University Department of Psychiatry was opened in the General Infirmary at Leeds in 1946, and the demand for its services soon exceeded the clinic's capacity. As a result there accumulated a list of psychoneurotic patients awaiting psychotherapy, and by 1955 this list had risen to 83 patients, some of whom had been waiting for seven years. This situation offered an opportunity of studying the extent to which such patients show a tendency to spontaneous recovery.

Method

The first step was to classify the patients, and, since no "standard system" had been in use in the clinic, our classification was based on our reading of the notes. It became clear that there were three groups of patients: (1) Those in whom the symptoms were predominantly overt anxiety. These were classed as "anxiety state" (42 patients). (2) Those who suffered from hysterical conversion symptoms. These were classed as "hysteria" (19 patients). (3) Those who did not fall into either group 1 or 2. These were classed as "miscellaneous" (22 patients), and comprised the following diagnoses: depression, 5; hypochondriasis, 4; schizoid personality, 4; stammer, 3; psychopathic personality, 2; obsessional neurosis, 1; eczema, 1; impotence, 1; homosexuality, 1.

A letter was sent to each patient saying that the department was interested in how he was progressing (no mention was made of the fact that the promised treatment had not been forthcoming), and the choice of a home visit or interview at the clinic was offered.

The result of this inquiry was that 29 patients agreed to be interviewed, 15 refused to be interviewed, 13 letters were returned marked "unknown," from 20 there was

no response, 4 were dead, and 2 were in a mental hospital. Thus we had conclusive information about 50 patients (60.2%) either in the form of agreement or refusal to be visited or as having died or been admitted to a mental hospital.

The 20 patients who had failed to reply to the letter of inquiry offered an opportunity of increasing our contact if persevered with, and a second letter was therefore sent to these patients saying that the psychiatric social worker would call at a specified time, hoping to find the patient at home. The result of this manœuvre was that we were able to redistribute the 20 "non-repliers" amongst the other categories.

As the follow-up progressed, nine patients who had initially refused to be visited got in touch with the department and requested an interview, and seven patients who had consented to a visit were found to have had treatment elsewhere since being put on the waiting-list and were therefore eliminated from the inquiry.

The revised figures showed that 43 patients agreed to be interviewed, 11 refused to be interviewed, 16 were "unknown" or "had gone away," 4 had died, and 2 were in a mental hospital. Thus there were 49 contacts and 27 non-contacts.

The Interview

So far as was possible, information was obtained on the following points: (*a*) The patient's condition at the time of referral. (*b*) An estimate of his present situation and what had led to it: is the patient coping with his life situation and is he still in need of treatment? (*c*) The factors which appear to have played a part in any improvement that had taken place.

When the patients were seen it became apparent that they fell into four fairly well defined groups:—(1) Recovered: these were symptom-free and in full employment, and had suffered no loss in socio-economic status. (2) Improved: these were troubled only by residual symptoms, were in full employment, and had suffered no loss in socio-economic status. (3) Not improved: symptoms the same or worse and/or employment situation unsatisfactory and/or socio-economic status reduced. (4) Died.

Results

The contact and non-contact groups are compared in Table I according to diagnosis. The χ^2 test shows that there is no significant difference between the contact and non-contact groups in respect of the frequency with which the different diagnoses occur.

Recovery Rate.—For statistical purposes the "recovered" and "improved" groups were taken together and classed as "improved." Table II shows the distribution of patients according to the degree of recovery and the diagnosis. Obviously we had information on this point only in respect of the contacted patients. The overall improvement rate was 65.3%; the improvement rate for each diagnostic group was: anxiety state, 68%; hysteria, 50%; miscellaneous, 75%. Most psychiatrists would probably agree that the hysteric is a much more difficult therapeutic problem than the anxiety neurotic, and this is reflected in the spontaneous improvement rates. In the miscellaneous group the improvement rate of 75% seems rather high, but this is probably partly accounted for by the fact that this group of 12 patients contained four depressives, all of whom recovered.

TABLE I.—*Distribution of Contacts and Non-contacts According to Diagnosis*

	Anxiety State	Hysteria	Miscellaneous	Total
Contact	25	12	12	49
Non-contact ..	14	5	8	27
Total ..	39	17	20	76

TABLE II.—*Distribution of Patients According to Diagnosis and Degree of Recovery*

Diagnosis	Improved	Not Improved	Died	Total
Anxiety state ..	17	7	1	25
Hysteria ..	6	3	3	12
Miscellaneous ..	9	3	0	12
Total ..	32	13	4	49

The Non-repliers

This is an interesting group. These patients failed to reply to the first letter, and persistence with them was rewarded with a further number of contacts. Twelve patients from this group of 20 agreed to be interviewed. The important point here is that had the second follow-up letter not been sent these patients would have been classed as "non-contact." This means that these patients can be regarded as a sample of a "non-contact" population—though one cannot say whether they are a representative sample or not. These patients deserve close study, since patients who fail to reply to follow-up letters are supposed to differ in some ways from those who do reply.

In Table III the 20 non-repliers are analysed and compared with the rest of the waiting-list in respect of diagnostic distribution. It shows that, if anything, anxiety neurotics tend to fail to reply more than do hysterics, but the figures are unsuitable for χ^2 test application.

TABLE III.—*Diagnoses of Non-repliers Compared with Rest of Waiting-list*

	Anxiety State	Hysteria	Miscellaneous	Total
Non-repliers ..	15	2	3	20
Rest	24	15	17	56
Total ..	39	17	20	76

TABLE IV.—*Distribution of Improved and Unimproved Cases in Non-repliers Compared with Rest of Contacts*

	Improved	Not Improved	Died	Total
Repliers	23	10	4	37
Non-repliers ..	9	3	0	12
Total ..	32	13	4	49

In Table IV we have analysed the non-repliers according to the degree of recovery shown and compared them with the rest of the contacts. The figures are not suitable for χ^2 test application.

The improvement rate for the repliers is 62.2% and for the non-repliers 75%. This would seem to indicate that the non-repliers have improved more than the repliers, but the 4 patients who died introduce a complication here, since we do not know if they had

shown any improvement in their psychiatric condition before death. With the present figures the differences are probably hardly significant.

Effect of Lapse of Time

In Table V the patients contacted are broken down according to the waiting-time for psychotherapy. The improvement rates for all five years cluster around the

TABLE V.—*Number of Patients Improved, Not Improved, or Dead According to Period of Time Waiting for Psychotherapy*

Waiting-time	Improved	Not Improved	Dead	Total
7 years	5 (62·5%)	2	1	8
6 ,, ...	10 (66%)	4	1	15
5 ,, ...	6 (60%)	3	1	10
4 ,, ...	5 (71·4%)	2	0	7
3 ,, ...	6 (66·7%)	2	1	9
Total ..	32 (65·3%)	13	4	49

60%–70% mark. This indicates that the remission rate did not alter with the passage of time after the third year—that is, any recovery which had taken place had done so during the first three years.

In Table VI the results of the first follow-up letter are tabulated according to the time waiting for psychotherapy (less the seven patients who had

TABLE VI

Waiting-time	Agreed	Refused	Returned Unknown	No Reply	Died	Mental Hosp.	Total
3 years	5 (41·7%)	0 (0%)	1 (8·3%)	4 (33·4%)	1	1	12
4 ,,	2 (20%)	2 (20%)	2 (20%)	4 (40%)	0	0	10
5 ,,	5 (29·4%)	4 (23·5%)	2 (11·8%)	5 (29·4%)	1	0	17
6 ,,	6 (25%)	6 (25%)	5 (20·8%)	5 (20·8%)	1	1	24
7 ,,	4 (30·7%)	3 (23·1%)	3 (23·1%)	2 (15·4%)	1	0	13
Total	22	15	13	20	4	2	76

treatment elsewhere). The figures are too small to permit of tests of significance, but the findings have been expressed as a percentage for each year. It is seen that the passage of time did not affect the willingness to be interviewed or the tendency to refuse. The number of those untraced tended to rise—a not unexpected result; but, curiously enough, the tendency to fail to reply fell. No conclusion can be drawn from the figures for deaths and admissions to mental hospitals.

Factors Influencing Improvement

Although the recovered and improved groups were amalgamated for statistical purposes it is more profitable to examine each group separately when the factors influencing remission are considered, since it became clear that in this respect there were important differences between the two groups.

Of the 49 patients, 15 were classed as recovered, 17 as improved, and 13 as unimproved. The four patients who died were excluded from this part of the inquiry, since there was no way of knowing whether their psychiatric condition had altered or not before their death. (Unfortunately in three of the recovered and four of the improved cases, details given under the various headings below were not obtained. Percentages have been calculated on the total number in each group, but these might have been different had the missing information been available.)

Role of General Practitioner.—Five (33%) of the recovered group imputed great merit to the supportive role of the general practitioner and his having explained the psychiatrist's findings to them. Only 2 (15%) of the improved group expressed a similar opinion, and in the unimproved group there was no evidence of this kind, explicit or implicit, to be gathered from the interview.

Influence of Marriage.—Stability of the existing marriage or the subsequent contracting of a stable marriage had played a part in 10 (67%) of the recovered group. Two patients had in fact recovered following liberation from unhappy marriages by divorce. One had survived a marital catastrophe—the sudden removal of her husband to prison and other vicissitudes. In the improved group 6 (35%) attached great importance to the stability of the marriage partner, and in three of these cases the arrival of children had helped by giving the patient the responsibility, status, and interest of a parent. In the unimproved group the present marriage held in 9 cases (69%) only because of the stability and qualities of the spouse on whom the patient was strongly dependent.

Housing.—In the recovered group all the patients were adequately housed. In 7 (41%) of the improved cases the patients ascribed improvement to the acquisition of good housing, which could be regarded, therefore, as an operative factor in their remission. On the other hand, 9 (69%) of the unimproved group enjoyed good housing.

Employment.—In the recovered group all were working who might be expected to do so. There were no complaints of unsuitability of occupation, but several instances of successful adjustment to uncongenial occupations. The findings in the improved group were largely similar, and it was only in the unimproved group that complaints of boredom and occupational frustration were expressed, by 4 patients (30%).

Problems of Post-war Resettlement.—In the recovered group all the male patients had successfully adjusted themselves to civilian life, but 4 (24%) of the improved group were still struggling with the problems of post-war resettlement. There was no problem of this kind in the unimproved group.

Interests and Group Activities.—Of the recovered group 10 (67%) had interests beyond themselves in one sort of group activity or another—for example, political organizations, trade unions, clubs, etc. This trend was not so marked in the improved group, only 4 patients (23%) having such group interests. None of the unimproved patients had any adequate group affiliations, and all tended to live in small isolated worlds, with their thoughts and activities rarely directed beyond themselves.

Religion and Cults.—Five (33%) of the recovered patients had either moved or were moving towards a religious faith or a supportive cult of some kind—for example, theosophy, nature healing, faith healing, etc. Only 3 (18%) of the improved group showed this tendency, and it was entirely absent in the lives of the unimproved patients.

Personality.—Although there was no way of measuring this, it was clear that the recovered patients were better integrated, more able to deal with their problems, and had a stronger sense of direction in life than the improved group. This maturity was often expressed as a simple philosophy of life such as "just growing older" or "just growing up." This trend was not noticeable in either the improved or unimproved groups. The latter, in fact, contained 11 patients (85%) who had long-standing personality difficulties.

Discussion

The "natural history" of a mental disorder—that is, its course uninfluenced by any therapeutic intervention—is probably a purely abstract conception. Pollitt's (1956) paper on spontaneous remission in obsessional states is the only publication on this topic we could find, but his patients can hardly be said to have had no treatment, since nearly half were admitted to hospital.

It is, of course, true that in any social group we are all subjected to various external pressures and influences which modify our behaviour and personalities. In this sense the patients whom we followed up could not be said to have had no treatment. But it can be clearly stated that they did not undergo any formal psychotherapy given by a psychiatrist. Thus we have a group of psychoneurotic patients who on examination by a psychiatrist were considered to be in need of expert formal psychotherapy. The recovery rate without such treatment was 65.3%.

Appel *et al.* (1953) review the results of psychotherapy as reported in 11 studies and find a high degree of constancy in the recovered or much improved rates in the various papers. These recovery rates vary from 55% to 76% with one exception—namely, an improvement rate of 80% reported by Hinsie and Landis. (This figure is based on the condition of patients on discharge from an American State Hospital and does not include a follow-up study. No doubt the figure would have been lower had these patients been reviewed in a year or two.) The overall improvement rate was 66.7%. This compares strikingly with Pollitt's figures—two-thirds improved for obsessional states—and is close to our figure of 65.3%. From this it would appear that psychotherapy has little effect on the outcome in psychoneuroses, and this bears out Eysenck's (1952) surmise that the spontaneous remission rate of psychoneuroses is approximately 66%. From our data alone it could not be said that psychotherapy has no effect, however, as we have no information on the comparative *speed of recovery* of treated as against untreated patients. Again, we have no data on the *quality* of recovery of treated as opposed to untreated neurotic patients, and this presumably could be ascertained only by a long-term follow-up to determine the rate of recurrence in each group. Rogers and Dymond (1954) in a carefully planned study have attempted to overcome the problem of natural remission by using an untreated group, but their assessment of this control group takes place between six months and one year after the first interview. They have devised an ingenious method of assessing results, and claim that the treated group do better than the untreated. Our findings suggest that those patients might, with profit, be reviewed up to three years after the first interview.

Our figures show that any recovery which takes place spontaneously does so by the third year. This means that in any study on the effect of psychotherapy the assessment of the patient's condition must be made within, at most, three years of the beginning of treatment.

Recovery and improvement in our patients were clearly related to the personality of the patient. The better-integrated patients showed a higher recovery rate, and they also showed a greater capacity for adjusting to adverse and difficult circumstances. The quality of the marriage partner was an important factor also, but it could be argued that the well-integrated person, who has a better prognosis anyway, will tend to marry a spouse of good personality. Though such features as good personality, success in work, general adequacy in the life situation, participation in group activities, and evidence of interests beyond themselves are strongly characteristic of the recovered group, one could not say that they had produced recovery. It would be more reasonable to attribute the improvement *and* the healthy mental and social life to good innate qualities of personality. This view is supported to some extent by the finding that most of our unimproved group had good housing and material social conditions but were still unable to overcome personality deficiencies.

Homans (1951) remarks that "the isolated individual is sick in mind and will exhibit disorders of behaviour, thought, and emotion," and this is borne out by the poorer social relationships in our improved and unimproved groups.

The group who failed to reply were not very different from those who did reply, although there was a slight tendency for anxiety neurotics to fail to answer follow-up letters. This might be expressed in another way—that is, there was a slight preponderance of hysterics in the patients who answered the first letter. This is not surprising considering the attention-seeking qualities of the hysterical personality.

There was no real evidence that the non-repliers had a lower spontaneous remission rate than the repliers—in fact, the trend was in the opposite direction. This should be stressed in view of the opinion sometimes expressed that the very fact of failing to reply indicates some measure of psychiatric illness.

These findings are contrary to the results published by Woodside (1955), who stated that patients who fail to reply tend to belong to certain diagnostic categories—namely, hysterics, psychopaths, and alcoholics. Such a conclusion cannot logically be drawn from the data given in her paper, since in order to do this one would have to show that there was a higher incidence of these diagnoses in non-repliers compared with the incidence of the same diagnoses in the *total* number of patients followed up.

Concerning the follow-up method, the importance of persisting in the inquiries in the face of apparent indifference from the patients was clearly shown, and we also found that the passage of time, the degree of recovery, or the fact that treatment had been promised and not given had no effect on the willingness to be followed up.

Summary

Eighty-three psychoneurotic patients who had been promised psychotherapy and who failed to receive it were followed up, and valid information was obtained on 49.

The spontaneous improvement rate was 65.3%.

Those who recovered tended to have more stable marriages and more satisfying group relationships than those who failed to recover.

There was evidence that any spontaneous improvement which takes place has done so by the third year.

There was no significant difference in respect of degree of recovery and diagnosis between those who failed to reply and those who did reply.

The willingness to be followed up was unaffected by passage of time, the failure to receive treatment, or the degree of recovery.

This survey was done at the suggestion of Dr. Max Hamilton, of the Department of Psychiatry, University of Leeds. We thank him for guidance and encouragement throughout the inquiry. We warmly appreciate the interest in the study shown by the late Professor D. R. MacCalman and Professor G. R. Hargreaves. Our thanks are also due to Miss Mary Stewart and Mrs. M. Johnson for much secretarial assistance.

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MENSTRUATION AND ACUTE PSYCHIATRIC ILLNESSES

BY

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This investigation was undertaken to determine whether acute psychiatric admissions to hospital were in any way influenced by the premenstruum or by menstruation. For many years it has been believed that psychiatric illness was apt to exacerbate at the time of the menstrual period, and in this paper an attempt is made to determine if such a relationship exists. It has been prompted by the recognition of the premenstrual syndrome and its successful treatment (Greene and Dalton, 1953).

As there are many ways in which the acutely ill can be admitted to hospital it was decided to examine admission records of two large mental hospitals (2,470 and 2,290 beds) and the mental observation ward of a London teaching hospital, and to confine the investigation to those patients whose illness was so acute that immediate admission was sought. This meant that patients who were admitted when a bed vacancy occurred were excluded, as were those admitted through an out-patient clinic. By this means the investigation was restricted to those whose admission was obtained because of the acuteness of their illness at the time of admission.

The sister in charge of admissions recorded the date of the patient's last menstrual period at the time of her admission. The data were obtained from statements of patients suffering from a variety of psychiatric illnesses and excluding those too ill to give reliable information. All patients with amenorrhoea exceeding 28 days were excluded.

Results

For the interpretation of results the 28 days of the menstrual cycle were divided into seven four-day periods, in which days 1–4 corresponded to menstruation, days 13–16 covered ovulation, and days 25–28 the premenstruum. It was recognized that menstruation may exceed four days, but the full menstrual flow with relief of water retention usually occurs during the first four days. The relative incidence rate represents the number of actual admissions during a four-day period compared with the expected number of admissions during a four-day period (or one-seventh of total admissions).

Fig. 1 gives the time in the menstrual cycle of psychiatric admissions for 276 patients and shows that the expected rate of admissions is doubled during menstruation. Fig. 2 gives the time of admissions of 36 attempted suicides and shows a relative incidence rate during menstruation of 2.75 or 39%. This figure of 39% of attempted suicides during menstruation compares with the figure of 36% reported by Heller in 1900, 22% by Ollerdorf in 1905, and 33% by Slavik in 1910 (quoted by Gregory, 1957), and supports the findings of MacKinnon and MacKinnon (1956) that successful suicides seem commoner during the luteal phase. Figs. 3 and 4 show that admissions during menstruation are greatly increased both for 185 patients with depression and for 114 patients with schizophrenia.

The influence of menstruation on psychiatric admissions was evenly distributed among single, married, and widowed; among nulliparous and multiparous; and among those admitted for first and for recurrent attacks. There was, however, a marked difference in age, as shown in Fig. 5. The disturbing influence of menstruation was greatest among those under 25 years of age (37%), and compares with 20% for women over 45 years. The depressive and suicidal patients were

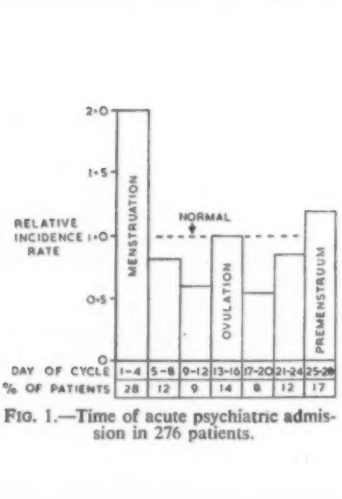

FIG. 1.—Time of acute psychiatric admission in 276 patients.

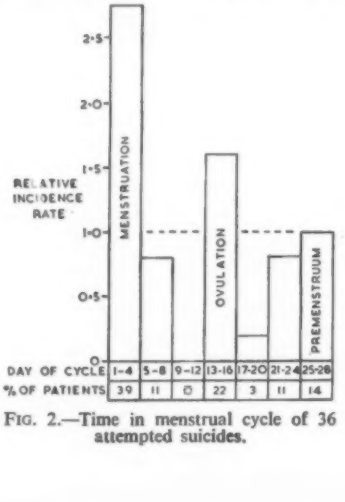

FIG. 2.—Time in menstrual cycle of 36 attempted suicides.

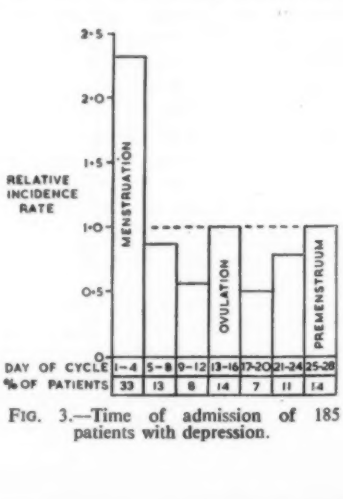

FIG. 3.—Time of admission of 185 patients with depression.

evenly distributed among all ages, while the schizophrenics were commonest among the younger age groups. The remaining patients were suffering from a wide variety of psychiatric illnesses—for example, psychoses, alcoholism, psychopathic disorders, neurosyphilis, and organic diseases. Their admissions were evenly distributed throughout the menstrual cycle, and they tended to belong to the older age groups. It seems, therefore, that the disturbing influence of menstruation in the younger age groups is due to the predominance of schizophrenics among the younger patients.

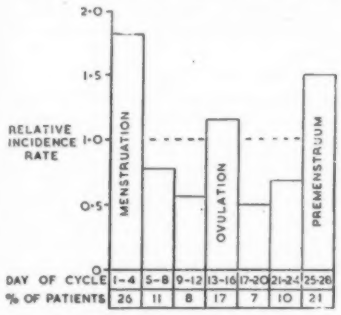

FIG. 4.—Time of admission of 114 patients with schizophrenia.

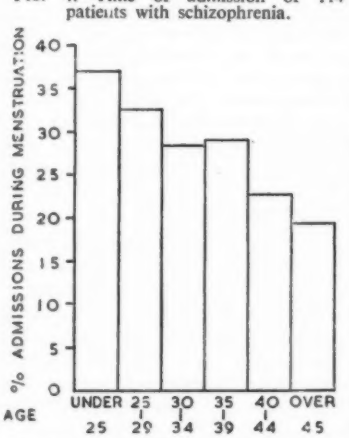

FIG. 5.—Age distribution of 78 patients admitted during menstruation.

Conclusion

This investigation into the time of admission of 276 psychiatric patients emphasizes the importance of menstruation and the premenstruum in relation to the onset of acute psychiatric episodes by revealing that 46% of all admissions occurred during this time. Indeed, 53% of attempted suicides, 47% of patients with depression, and 47% of schizophrenic patients were admitted during menstruation or the premenstruum.

The significance of these figures lies in the immediate prognostic value; for patients who first seek psychiatric help in the premenstruum may be expected to become worse up to the third or fourth day of the menstrual cycle. Nor should it be forgotten that premenstrual tension can be successfully treated, and this applies whether premenstrual tension occurs alone or in combination with other psychiatric illnesses and regardless of whether the hormonal changes of menstruation are causative or merely acting as a trigger in the onset of an acute psychiatric episode. Hormone therapy is not contraindicated by other psychiatric treatment.

My thanks are due to Dr. E. W. Dunkley for his guidance and kind criticism, to Dr. D. D. Reid for statistical assistance, to Drs. E. W. Dunkley, F. Steel, and J. S. Harris for permission to undertake this investigation in the patients under their care, and to the sisters of the admission wards who made the investigation possible.

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ATONY OF THE FEMALE BLADDER

REPORT OF FOUR CASES

BY

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Most cases of bladder distension fall into one or other of the three standard classifications—that is, of mechanical, congenital, or neurogenic origin.

A certain number of cases of insidious distension of the bladder in the female are seen, however, in which atony of the bladder itself seems to be the primary factor, and in these cases no obvious mechanical obstruction, congenital malformation, or neurological disorder is to be found. It is because of the obscure cause of this atony, and because so little literature is to be found on the subject, that the following four cases, all occurring in females, are recorded and the sparse literature is reviewed.

Case 1

A married woman aged 57 first presented at hospital in 1952 with an attack of pyelocystitis. She had never at any time experienced any difficulty with micturition and thought she had always passed a normal quantity of urine.

On examination there was a large mass in the abdomen, reaching to the xiphisternum, which was cystic with a well-marked fluid thrill. The blood urea was 28 mg. per 100 ml., and urine examination showed pus cells and scanty *Escherichia coli*. Her blood pressure was 140/80.

A provisional diagnosis of large ovarian cyst was made, and the patient prepared for laparotomy. In view of the vague urinary symptoms, the possibility of the mass being distended bladder was considered, and a preliminary catheterization was performed in the theatre. This failed to empty the swelling, owing, as it was afterwards proved, to distortion of the urethra and bladder neck from pressure.

On opening the abdomen a huge bladder was found. This was incised and a large quantity of urine evacuated, together with several vesical calculi. The bladder was closed in two layers, and two weeks later the wound was soundly healed. At this stage an intravenous pyelogram showed perfectly normal kidneys and ureters, with no evidence of hydronephrosis.

Full cystometric examination of the bladder revealed: (1) that the bladder initially contained 88 oz. (2.500 ml.) of urine; (2) that the bladder had to be filled to the extent of 100 oz. (2,840 ml.) before the patient got any sensation of fullness, and with this amount in the bladder a pressure of only 26 cm. of water was recorded on the manometer; and (3) that this pressure could be increased to 100 cm. of water by voluntary contraction of the abdominal muscles.

Operation.—This was performed in August, 1953, by Mr. J. S. Ramage. A diathermy excision of the bladder neck (which was macroscopically and microscopically normal) was carried out, and about two-thirds of the redundant bladder wall was resected. The bladder was closed without drainage, and a rapid recovery with primary healing of the bladder occurred.

Several estimations of the residual urine have been made since operation, and it has varied between 7 and 10 oz. (200 and 280 ml.). It appears to be static in amount, and is not infected.

Histology of Resected Bladder.—Chronic inflammation was evident below the epithelial lining and in the deeper layers, and oedema and increased fibrous tissue were present around the smooth muscle bundles. No nerve ganglion cells were seen, but the nerve fibres were normal in number (Figs. 1 and 2). This apparently is the typical histological picture of the resected bladder in cases of primary atony.

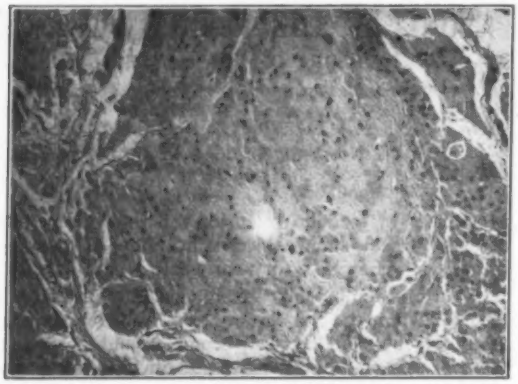

FIG. 1.—Low-power view of resected bladder (Case 1), showing chronic inflammation below the epithelial lining and increased fibrous tissue round the smooth-muscle bundles.

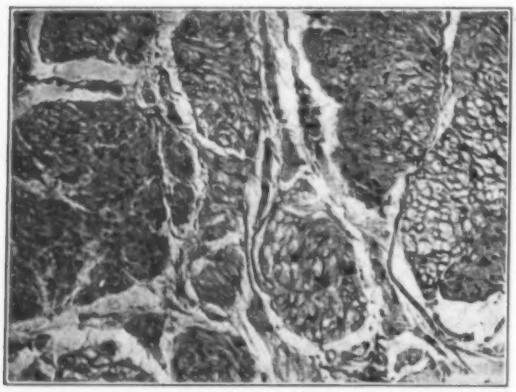

FIG. 2.—High-power view of part of section shown in Fig. 1. This emphasizes the fibrous tissue around the smooth-muscle bundles, the degeneration of smooth-muscle fibres, and shows the absence of nerve-ganglion cells. Nerve fibres, however, are normal in number.

Case 2

A married woman aged 66 was admitted to hospital in October, 1951, with a large inflammatory mass in the left iliac fossa. At operation this proved to be a paracolic abscess secondary to sigmoid diverticulitis, and was treated first by drainage and transverse colostomy and later by resection of the colon. It was whilst in hospital that this patient was first noticed to have a symptomless but palpable bladder, and on one occasion she passed 80 oz. (2,275 ml.) of urine quite spontaneously.

On cystoscopy the instrument went in easily, and the bladder wall was seen to be thrown into many large smooth folds. The blood urea was 38 mg. per 100 ml., and pyelography showed normal kidneys with no evidence of hydronephrosis. Her blood pressure was 120/80.

As she was quite comfortable, and in view of the previous major surgical procedures, she declined any operative treatment on her bladder. No opportunity for cystometry presented itself in this case.

Case 3

A married woman aged 65 was first seen in early 1953 because of some urinary incontinence and swelling of the abdomen. She was found on examination to have a palpable bladder well above the umbilicus. After admission to hospital she had to be catheterized every day, and 40–50 oz. (1,135–1,420 ml.) of urine was withdrawn on each occasion. The patient stated that her mother had similar urinary trouble, and in later life had to be catheterized every day. She was seen by a psychiatrist, who could find no mental abnormality or evidence of neurological disease.

Cystoscopy showed absence of a feeling of fullness of the bladder until it contained 60 oz. (1,700 ml.) of fluid, and at this point the intravesical pressure was only 25 cm. of water. Pyelography again showed normal kidneys, and the blood urea was 32 mg. per 100 ml. Her blood pressure was 130/85. She declined operative treatment on her bladder, and was quite happy for the district nurse to catheterize her periodically.

Case 4

A spinster aged 63 was first admitted to hospital in 1948 with abdominal pain and a large cystic lower abdominal swelling. She was thought to have a twisted ovarian cyst, and a laparotomy was performed by the resident surgical officer. The swelling proved to be a huge bladder, and the abdomen was closed after catheterization and withdrawing 75 oz. (2,130 ml.) of urine. The patient, an ex-nurse, admitted no previous urinary difficulties, but did admit the ability to go all day without passing urine and then to pass a large quantity. Pyelography showed normal kidneys, and the blood urea was 40 mg. per 100 ml. Her blood pressure was 135/80. Cystoscopic findings were as in the other three cases, with no evidence of obstruction of the bladder neck but large smooth folds of bladder wall. It was necessary to put 65 oz. (1,845 ml.) of urine into the bladder before she experienced any feeling of fullness, and this amount showed a pressure of only 24 cm. of water. Voluntary contraction of the abdominal muscles increased this to 95 cm.

The patient declined partial cystectomy, and, as she was an ex-nurse, was quite content to catheterize herself when necessary.

Anatomy

The nerve supply of the bladder is derived from both branches of the autonomic nervous system. The sympathetic innervation is from the thoraco-lumbar outflow and constitutes the presacral or hypogastric nerve. It is now felt that the sympathetic innervation has little to do with the control of micturition, but it contains some sensory fibres mediating pain and temperature, and also exercises some vascular control on the vessels of the bladder wall.

The parasympathetic nerve supply (pelvic nerves or nervi erigentes) is from the sacral outflow, and its preganglionic fibres make their synaptic connexions with the visceral ganglion of the bladder. It is generally agreed that the parasympathetic nerves are the motor nerves of the bladder. Stimulation of the pelvic nerve or the sacral segments of the cord causes contraction of the bladder and the evacuation of urine.

Review of the Literature

The first real reference to the atonic bladder and its treatment by subtotal cystectomy seems to be that of Orr (1937), who described a case which he first presented at the meeting of the Southern American Medical Association in 1936.

Nothing further appeared in the literature until 1948, when Crabtree and Muellner published eight cases of atonic bladder successfully treated by removal of two-thirds of the organ. Apparently Crabtree had performed one such operation as early as 1937.

Fish (1950) reported the cases of four male patients in whom subtotal cystectomy alone or in combination with prostatectomy was performed for the chronically dilated bladder. He also pointed out the absence of dilatation of the kidneys in his cases and the presence of a normal blood pressure and blood chemistry. Houtappel (1952) reported 13 cases of bladder atony, all but one of which

were male. In his female case he first of all carried out transurethral resection of the bladder neck, which had only a slight effect on the residual urine, but considerable benefit was found after removal of two-thirds of the distended bladder. This case suggests that the primary pathology may be in the bladder itself.

Discussion

It is suggested that there are two types of bladder atony, the myogenic and the neurogenic, or possibly a combination of the two, in which some muscle as well as nerve degeneration takes place in the bladder wall.

Crabtree and Muellner, and later Houtappel, found, as we did in Case 1, that an increase in fibrous tissue around the smooth-muscle bundles is absolutely characteristic of the histology of the resected bladder wall. The absence of nerve-ganglion cells also seen in Case 1 may be of significance here.

The theory is advanced that there is either a nerve degeneration or a muscle degeneration in the bladder wall in these cases, and that atony and distension occur simultaneously so that no renal back-pressure effects are seen. In our experience the condition is predominantly found in females; most of the male cases reported have had either prostatism or some organic obstructive lesion. We have, in fact, experience of one male patient, aged 54, whose bladder contained on occasion as much as 80 oz. (2,275 ml.) of urine, but who micturated quite normally and could be catheterized easily. The absence of full investigations in this case, however, precludes its inclusion with confidence in the present series.

It is generally agreed that the ideal treatment in these cases, after careful exclusion of any of the common factors causing bladder distension, is subtotal cystectomy, removing two-thirds or three-quarters of the redundant bladder wall. Transurethral resection of the bladder neck by itself has no effect on the residual urine. There appears to be some chance of the residual urine increasing slightly in amount after partial cystectomy.

Summary and Conclusions

Four female cases of a hitherto neglected condition —primary atony of the urinary bladder—are described. Most of the sparse literature on the subject is quoted.

The classical clinical picture of the condition is a palpable distended bladder with large residual urine and often little in the way of symptoms except occasionally frequency. The patient really has an overflow retention. On cystoscopy no obstruction of the bladder neck is to be found, and a bladder wall thrown into numerous smooth folds is typical. The absence of hydronephrosis or hydro-ureter on pyelography and the absence of disturbance of blood chemistry or blood pressure are also constant features.

Subtotal cystectomy is the treatment of choice, and this was done in one case, but no great harm appears to result if the condition is left in the older patients, as no progressive renal damage is likely to occur. Cystometric findings are also characteristic in these cases.

There is no obvious reason why a comparable condition should not occur in the male.

I thank Mr. F. W. Duthie, Mr. R. A. Keane, and Mr. J. S. Ramage for access to the case records of these patients, the department of clinical photography, and the staff of the pathological department of the North Staffs Royal Infirmary, for the histological sections of the bladder and for the photographic prints.

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TREATMENT OF CHRONIC NON-SPECIFIC DIARRHOEA

A CLINICAL COMPARISON

BY

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There are a number of persons who suffer perennially from chronic non-specific diarrhoea. The aetiology in these cases is no doubt diverse, but they are similar in that they form a symptomatic group in which no organic lesion can be discovered. Various forms of symptomatic relief are attempted, among which the use of a derivative of opium or one of the various antispasmodics on the market are popular at present. It seemed important that a clinical comparison should be made of the effectiveness of such treatment.

The selection of an antispasmodic was difficult, for there is no comparative study of the effectiveness of the many preparations available. Tricyclamol has been shown to be effective in decreasing gastric motility in balloon motility studies (Anderson 1955) and also in barium studies (Aylett and Douthwaite, 1955). Claims have also been made for its effectiveness in the control of " hypercholinergic " bowel symptoms (Schwartz *et al.*, 1955). However, the final selection of tricyclamol was arbitrary and was made largely on the ground that a supply was readily available. It is believed, however, that it may be representative of the group of antispasmodics. For comparison, codeine was selected because it has been used for many years in the treatment of diarrhoeal states and has been found effective in the hands of many clinicians. Codeine was used in a dosage of 30 mg. t.i.d. and tricyclamol in a dosage of 50 mg. t.i.d.

Material and Method

Selection of Subjects.—The subjects for the trial were patients attending the routine hospital out-patient department. All of them had bowel symptoms for at least six months prior to the commencement of the study. Immediately preceding admission to the trial all had at least 14 bowel actions a week, with loose or watery motions, often associated with abdominal discomfort. Examination by barium meal, barium enema, and sigmoidoscopy was negative in all cases. In

*In receipt of a grant from the Medical Research Council.

the four subjects tested the faecal fat was normal. There was no gross evidence of steatorrhoea in any case. In all, nine persons agreed to co-operate in the trial. Of these, six suffered from constant diarrhoea and three had intermittent attacks with only brief periods of remission. The group was a heterogeneous one. The aetiology must be a matter of some dispute in any individual case. While in some of the patients the condition may have been determined by emotional disturbances, in others no such factors were seen to be present. In the absence of a satisfactory classification of the chronic diarrhoeas no attempt has been made to categorize these subjects. They are presented as a symptomatic group—probably of mixed aetiology—in which a trial of symptomatic control has been undertaken.

Plan of Trial.—Before the administration of either of the preparations each subject was observed over a period of at least 14 days. During this time each completed a daily stool chart giving full details of the number and consistency of the stools. A full record was also made of any abnormality such as the presence of blood, pus, or mucus, and a brief note of the general condition on that particular day. In fact, most persons were observed for much longer periods before beginning the trial, as the preliminary examinations were not completed within a fortnight. The subjects understood the objective of the trial, but they did not know the nature of the drugs being employed. Each drug was administered for a period of 14 days, during which time stool charts were completed in full. Five subjects received codeine in the first fortnight of the trial, followed by tricyclamol in the second fortnight. For the remaining four subjects the order was reversed. Assessment of the effectiveness of the drugs was made first of all on the average number of stools passed per week and, secondly, on the patient's subjective reactions to the drug.

Results

The Table sets out the results of the trial. The figures in the "control" column refer to the average number of stools passed per week during the observation period of a fortnight prior to administration of the drugs. Comparative figures for the fortnight during which codeine and tricyclamol were administered are also given.

Average Number of Bowel Actions per Week

Subject	Control	Codeine	Tricyclamol
L.P. ..	16	5	Stopped on day 3
W.R. ..	17	10	40*
E.W. ..	25	11	25
K.D. ..	18	7*	Stopped on day 2
G.G. ..	17	8	15
P.K. ..	31	7	32
D.K. ..	19	14*	40
J.S. ..	21*	9	Stopped on day 3
M.E. ..	21*	12	23
Average	21	9	29

* Approximate figures: patients failed to maintain detailed records.

Using the number of stools passed per week as the objective measure of the effectiveness of these drugs, it is seen that codeine reduced the number of bowel actions to a normal figure in most subjects. Tricyclamol, however, did not do so in any member of the group.

Patients' Subjective Reactions

The patient's subjective reaction was strongly in favour of codeine in all cases but one. In addition to reducing the number of bowel actions codeine also decreased the urgency and precipitancy of defaecation. The subjects had an unaccustomed sense of well-being and security, and felt more able to lead a normal social life without fear or embarrassment.

It was remarkable that all but one subject expressed themselves strongly against tricyclamol. These persons were not only increasingly handicapped and embarrassed by frequent urgent bowel actions, but in some cases experienced general symptoms of an unpleasant nature. Three felt sufficiently unwell to discontinue the drug after two or three days of treatment. These subjects described their symptoms as profound malaise, depression, and lack of ability to concentrate. One patient appropriately described himself as being "washed out."

Five of the subjects complained of severe abdominal colics while taking the antispasmodic. One complained of a dry mouth and two of blurring of vision. While taking codeine two of the subjects complained of drowsiness, which, however, was not sufficient to interfere with normal work. It seemed clear, even using such a small experimental group, that codeine was an effective drug in the symptomatic control of the group, while the antispasmodic not only failed to control the symptoms but exaggerated most of them.

Discussion

The number of subjects used is small, but in view of the clear result we did not think it necessary or justifiable to investigate a larger group. It is clear that the administration of tricyclamol is not effective in controlling this group of non-specific diarrhoeas. Even in those subjects in whom side-effects directly attributable to the antispasmodic were present and in whom it would not be desirable to increase the dose of the drug, there was no effective control of the colonic symptoms. In one subject the dosage of tricyclamol was increased to 300 mg. a day without effecting any control of diarrhoea. We have used other antispasmodics in an attempt to effect symptomatic control of diarrhoea, both before and since this trial, but without success, and we are satisfied that tricyclamol is not a particularly unfortunate choice of antispasmodic. The results of the trial probably apply in general to other preparations.

It may be that the use of antispasmodics will be beneficial to a limited number of these sufferers, as possibly certain of the persons who at present are grouped as cases of non-specific or nervous diarrhoeas will in the future be proved to be patients suffering from autonomic imbalance of the bowel. In these the administration of an anticholinergic or antispasmodic might be effective. However, until such time as this nebulous group of conditions can be satisfactorily broken down into aetiological categories, it would not seem to be rewarding to administer anticholinergics indiscriminately. On the other hand, codeine is cheap and effective, and remarkably free from untoward reactions or side-effects in the dosage used. Symptomatic control of the symptoms, using codeine, has been continued in a large number of patients for many months. As the diarrhoea in many of these cases tends to clear up spontaneously after a varying period of time the use of codeine in doses of 30 mg. two or three times daily is a very effective method of tiding a patient over the acute phase of the bowel disorder.

Summary

A clinical comparison is presented of the use of an opium derivative, codeine, and an antispasmodic, tricyclamol, in the treatment of chronic non-specific diarrhoea.

The antispasmodic failed to control the symptoms and in a number of subjects exaggerated them.

Codeine is an effective symptomatic remedy for chronic non-specific diarrhoea.

We are grateful to Dr. F. Avery Jones for helpful advice in preparing this paper.

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Medical Memorandum

Dequalinium in Myasthenia Gravis

During the course of treatment of a severe case of myasthenia gravis the patient developed a pharyngitis and was given decamethylenebis-4-aminoquinaldinium chloride (dequalinium chloride; "dequadin"). This compound was discovered to have antimicrobial activity by Babbs *et al.* (1956). They also found that, like other heterocyclic polymethylene bis-quaternary ammonium salts, there was a neuromuscular blocking activity, and that mice receiving it intravenously were paralysed. Clinically this drug is used as an oral antiseptic, and whilst being given on this account marked improvement was noted in the patient's myasthenia. The following case is reported because the problem may be worthy of further specialized study. The initial diagnosis in this instance was reached after marked resistance to suxamethonium ("scoline").

CASE HISTORY

A woman aged 62 was admitted to hospital on March 10, 1957, with a three-days history suggestive of a bulbar palsy. She had first developed difficulty in speaking. Progression of this disability with the onset, the previous day, of inability to swallow had made special care necessary. A vascular cause was at first suspected in view of the acute onset and the finding of a blood pressure of 230/120 mm. Hg. Her previous health had been good apart from some weakness in the left leg of six to eight months' duration on climbing stairs.

During her first day in hospital laryngeal stridor with difficulty in breathing led to anxiety. Preparations were made for a tracheotomy under general anaesthesia. Suxamethonium up to 9 ml. (450 mg.) did not paralyse the vocal cords, and, myasthenia gravis being suspected, she was allowed to come out of the anaesthetic and given intravenous neostigmine, 2 ml., which produced immediate relief of all symptoms.

The full-blown syndrome of myasthenia became obvious during the first week, with ocular palsy, drooping of the lids, and weakness of the neck and arms in addition to the initial symptoms. These were relieved by neostigmine and pyridostigmine bromide ("mestinon") for about two hours. After 11 weeks she was discharged on neostigmine, 30 mg. every three hours by mouth. She was able to get around quietly, although weakness became obvious two hours after her neostigmine.

One month after discharge the patient complained of a sore throat and, associated with this, a deterioration of her voice. Examination showed some inflammation of the fauces, and dequalinium, one tablet (0.25 mg.) every three hours, to be sucked, was prescribed. In 24 hours there was marked improvement in her condition, and for the first time since the onset she felt almost normal. Before this she had felt herself needing head support even 20 minutes after neostigmine. Her voice, swallow, and general strength also improved and she felt able to go for short walks. After three days the dequalinium was stopped and immediately her condition deteriorated, to cause concern.

As a result of this, a trial was begun as follows. (1) Dequalinium, 0.25 mg., was given four-hourly for one week and then withdrawn the next week. This was repeated five times. It appeared that whilst on the drug the patient was considerably improved and had no symptoms. It was in fact possible to reduce the dosage of neostigmine to every four instead of three hours, and between doses of this drug she was much stronger. When off dequalinium she felt tired within half an hour after neostigmine, and before each dose was due felt very weak, unable to talk or swallow, and had double vision. (2) A blind trial with dummy tablets was performed on three separate occasions. Three days on dequalinium were alternated with three days on dummy tablets. Whilst on dequalinium there was considerable improvement and a relapse during the control periods. In fact, the relapse was enough to require almost three days on dequalinium before a return to normal.

The patient has been on dequalinium continuously for six months without ill effect and is asymptomatic on all counts with a steadily reducing dosage of neostigmine. At present she is having dequalinium, 1 tablet six-hourly, and neostigmine, 30 mg. six-hourly.

COMMENT

The basic pathology of myasthenia gravis is still far from clear. It is difficult, therefore, to give a simple explanation of the findings in the case reported above. The present position regarding the physiological action of neuromuscular blocking agents has been reviewed by Burn (1957). It would seem in myasthenia that there is a competitive block and the muscle and plate respond abnormally. Grob, Johns, and Harvey (1956) suggest the possibility that the defect could be due to choline or an abnormal product of acetylcholine. Potassium is known to be of great importance in the production of the end-plate potential, and Bülbring and Burn (1942) have investigated how sensitivity may be increased by adrenaline.

It is known that myasthenia gravis may remit spontaneously. However, there was sufficient immediate benefit in this case to suggest that dequadin might be responsible. It could act as a mild depolarizer or anticholinesterase potentiating the action of acetylcholine, or it might resensitize the plate.

The marked resistance to suxamethonium in myasthenia gravis is also not fully understood, but it too may be affected by the competitive block reaction. An adequate explanation is still required.

We are indebted to Dr. L. L. Banks, of the research department, Allen and Hanburys, for his interest, comments, and supplies of active and base tablets, etc.

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Reviews

CARCINOMA OF THE LUNG

Neoplastic Disease at Various Sites. Edited by D. W. Smithers, M.D., F.R.C.P., F.F.R. Vol. 1. *Carcinoma of the Lung.* Edited by J. R. Bignall, M.D., M.R.C.P. (Pp. 298 +xii; illustrated 55s.) Edinburgh and London: E. and S. Livingstone Ltd. 1958.

The first volume in a new series of monographs on neoplastic diseases appropriately deals with carcinoma of the lung. This subject is studied in a number of sections contributed by well-known authorities under the editorship of Dr. J. R. Bignall. They have produced a comprehensive and up-to-date survey of this sinister form of disease. The opening section, which deals with statistics and mortality, is approached by Dr. Case on the basis of cohort analysis. The next section is by Dr. Doll, who considers the present state of our knowledge as regards the causation of this disease. He recognizes the industrial hazards in dealing with some radioactive ores, such as nickel and chromates, and analyses the part played by atmospheric pollution, and above all by smoking. There seems little doubt that cigarette-smoking must be regarded as an important feature. The pathology, which includes the origin and method of spread of lung growths, is dealt with by Dr. Hinson in a section that is well illustrated and lays emphasis on Nohl's work on glandular spread. The course of the disease and its relation to such factors as age and sex is handled by the editor himself, who quotes from the now extensive experience which has been gained at the Brompton and Royal Marsden Hospitals. The section on treatment is perhaps proportionately a little short, though it deals fairly fully with surgery, radiotherapy, and chemotherapy as possible methods. Professor Smithers is quite frank in claiming little for radiotherapy other than palliation. The part played by surgery in treatment is reviewed by Mr. Cleland. He shows that recently published figures in a reasonably large series from Great Britain give a five-year survival rate of 25–30% of cases following resection. If this sounds in any way optimistic, it should be remembered that probably less than 20% of all those afflicted by this disease are operable.

Until the past few years there has been little comprehensive literature dealing with this subject. Most of the authoritative sections in textbooks have expressed the current views, but this book is one of the few works which cover all aspects in proper perspective. Recently several large series of figures have become available which allow statistical deductions about the results of treatment. The authors are to be congratulated on achieving a reasonable balance in presentation and on providing a review of most of the available information. If the pattern of this work is to be followed in subsequent monographs the publishers as well as the authors will have provided a valuable contribution to medical literature.

T. HOLMES SELLORS.

CLASS AND MENTAL ILLNESS

Social Class and Mental Illness: A Community Study. By August B. Hollingshead, Ph.D., and Fredrick C. Redlich, M.D. (Pp. 442+ix; illustrated. 60s.) New York: John Wiley and Sons, Inc. London: Chapman and Hall, Ltd. 1958.

This is the first account, in book form, of the extensive Yale studies which have been dealing with the prevalence and class distribution of mental illness in Newhaven, Connecticut. Other aspects of the investigation will be described in a companion volume by Myers and Roberts. It is an outstanding contribution to social psychiatry. Americans believe that class differences do not count with them and that they matter a great deal to us in Britain. With this superficial judgment we have been in the habit of agreeing. After reading this book we may well be tempted to believe the opposite. The first section of the book is a fascinating account of the social set-up to-day and how it came about. The population is divided into five social classes—not, of course, those of the Registrar-General, but roughly parallel; and carefully compiled profiles show exactly what life in each is like all the way from the Ivy and Junior Leagues to the Swamp Yankees in the tar-paper shacks on the sand flats. Later chapters show that your social class very largely determines your chances of being mentally ill, the type of mental illness you will have, and what treatment you will be given. Although capacity to pay is important, it is not the whole story. If you come from the top drawer you are much more likely to be given psychotherapy even if it means giving you a discount on the fees you pay. Before we British start to congratulate ourselves on our different standards, it might be as well to ask whether we really know what is going on here. If a study like this were done we might learn a great deal that we ought to know about ourselves.

T. FERGUSON RODGER.

HAEMOPHILIA AND RELATED CONDITIONS

Hemophilia and Hemophilioid Diseases: International Symposium. Edited by Kenneth M. Brinkhous, M.D. (Pp. 265+xxii; illustrated. 60s.) Chapel Hill: North Carolina University Press. London: Oxford University Press. 1958.

Haemophilia and its related conditions, though comparatively rare, create medical and social problems of some magnitude. Severely affected patients are often permanently disabled and may spend much of their lives in hospital. At any time an acute episode of bleeding or the necessity for surgery may confront the clinician with a therapeutic dilemma in which injudicious action on the one hand or overcaution on the other may cost the patient his life. The handling of such cases, both in their acute and in their quiescent phases, needs special experience and as much up-to-date knowledge of the basic pathology as the research worker can make available and intelligible.

This book provides a record both of clinical experience and of laboratory research which will be of great value to all those who are in any way concerned with haemophilia, be they physicians, surgeons, dentists, geneticists, pathologists, or simply blood-coagulation research workers. It is the report of the proceedings of a symposium sponsored by the National Hemophilia Foundation of the United States on "Hemophilia and the Hemophilioid Diseases," held in New York in 1956 and attended by many of the world's leading experts in the field.

The formal presentations consist of 29 papers grouped into a number of sections, each of which is followed by a general discussion. The first section, on the clotting defect in haemophilia, includes papers on the nature and preparation of antihaemophilic globulin (Factor VIII), the significance of inhibitors, the role of platelets, and the mechanism of haemostasis in haemophilia. The second section consists of a number of papers describing the clinical and laboratory aspects of the haemophilioid

states, including parahaemophilia (Factor V deficiency), proconvertin (Factor VII) deficiency, Christmas disease (P.T.C. or Factor IX deficiency), and other disorders. Next follows a short but admirable section on the inheritance and the genetic problems of the whole group of conditions in which animal work has reinforced observations on human inheritance. The sixth section deals with diagnosis—a matter of more than academic importance, since both prognosis and the possibility of specific treatment depend on the accurate identification of the clotting defect. The remaining three sections are mainly clinical. Prophylactic treatment, transfusion therapy, and surgical and dental problems are discussed, followed by sections on the pathology, complications, and management of haemophilic arthropathy; and, finally, there is a section dealing with the psychiatric and social aspects of these lifelong and disabling conditions.

In general the book is a pleasure to read. The papers for the most part are lucid and well produced, and the reports of the various discussions preserve not only factual interest but something of the spontaneity of the original proceedings. Even the seasoned old campaigner in the field of blood-clotting and the haemorrhagic disorders will find new and stimulating facts and ideas in every subject covered. Only some of the views on clinical management have been outdated to some extent by recent confirmation of the value of animal and human antihaemophilic globulin in major and minor surgery. The editor is to be congratulated on a well-balanced and logical presentation, and the publishers for producing a well-made book.

R. G. MACFARLANE.

ABORTION IN THE U.S.A.

Abortion in the United States: A Conference Sponsored by the Planned Parenthood Federation of America, Inc., at Arden House and the New York Academy of Medicine. Edited by Mary Steichen Calderone, M.D., M.S.P.H. Introduction by M. F. Ashley Montagu. (Pp. 224; $5.50.) New York: Hoeber-Harper. 1958.

The Planned Parenthood Federation of America recently sponsored a symposium on abortion. The conference was attended by leading gynaecologists, psychiatrists, and social workers, who freely and objectively discussed all aspects of therapeutic and criminal abortion. The contribution of one physician was particularly enlightening, since he had been convicted of performing illegal abortions; all his cases had been carefully documented, and the information he presented was of a unique character. In this book will be found the most recent data relating to this sociological problem, which in terms of socio-economic cost and individual misery and ill-health is high on the list of social diseases. One of the decisions reached by the conference was that consultation centres for women seeking abortion modelled after the Scandinavian centres should be established.

The situation in Britain is as grave as in any other country, and it has been estimated that there are about 150 illegal abortions each day. Increasing the severity of punitive measures will not solve the problem. Implementation of the Lambeth Conference recommendations on family planning and a change in the law would go a long way to mitigate this scourge, which is very much in our midst.

W. C. W. NIXON.

BOOKS RECEIVED

Review is not precluded by notice here of books recently received

Le Mongolisme. Principaux Problèmes Médicaux Psychologiques et Sociaux. By Robert Lecuyer. (Pp. 152. 1,500 fr.) Paris: G. Doin and Cie, Editeurs. 1958.

Ergebnisse der Gesamten Tuberkulose und Lungenforschung. Edited by St. E. L. Heilmeyer, J. Hein, and E. Uehlinger. Vol. XIV. (Pp. 735+viii; illustrated. DM. 144.) Stuttgart: Georg Thieme Verlag. 1958.

La Chinidina in Terapia. By C. Bonessa and M. Morpurgo. (Pp. 122+xii; illustrated.) Turin: Minerva Medica. 1958.

Directory of Medical and Biological Research Institutes of the U.S.S.R. Compiled by D. F. Gelfand. Washington, D.C.: U.S. Department of Health, Education, and Welfare. 1958.

Patients are People. A Medical-Social Approach to Prolonged Illness. By Minna Field. 2nd ed. (Pp. 280+xii. 36s.) New York: Columbia University Press. London: Oxford University Press. 1959.

The Johns Hopkins Hospital and the Johns Hopkins University School of Medicine. A Chronicle. Volume II, 1893-1905. By A. M. Chesney, M.D. (Pp. 499+xiv; illustrated. 48s.) Baltimore: Johns Hopkins Press. London: Oxford University Press. 1959.

Atlas d'Électrocardiographie et de Vectocardiographie. Étude du Ventriculogramme dans les Conditions Normales et Pathologiques. By P. W. Duchosal and J. R. Grosgurin. (Pp. 181; illustrated. Sw. Fr. 23.) Basel, New York: S. Karger. 1959.

Manual of Chest Clinic Practice in Tropical and Sub-Tropical Countries. By A. J. Bennat, M.D. (Pp. 100+vii; 10s. 6d.) Edinburgh, London: E. and S. Livingstone Ltd. 1959.

Re-education of the Injured Shoulder. By R. B. Brookes, F.C.S.P. (Pp. 114+viii; illustrated. 12s. 6d.) Edinburgh, London: E. and S. Livingstone Ltd. 1959.

Concise Textbook of Anatomy and Physiology Applied for Orthopaedic Nurses. By Joyce W. Rowe, S.R.N., S.C.M., O.N.C., and V. H. Wheble, M.A., B.M., B.Ch., F.R.C.S. (Pp. 684+viii; illustrated. 35s.) Edinburgh, London: E. and S. Livingstone Ltd. 1959.

Hématologie Clinique. By J. Bernard and M. Bessis. (Pp. 526; illustrated. 14,500 fr.) Paris: Masson et Cie. 1958.

Surgical Progress, 1957, under the general editorship of Sir Ernest Rock Carling and Sir James Paterson Ross (pp. 426, illustrated, 52s. 6d., Butterworth and Co., Ltd., London), is the seventh of an annual series of supplements which keep the eight volumes of the main work, *British Surgical Practice*, up to date. A departure has been made in this volume from the scheme used previously in that the original articles are followed by general surveys of selected systems and specialties, and these are followed by abstracts relating to the subject. An alphabetical "noter-up" reference section guides the reader from the main work to supplementary material in this or previous progress volumes. The two original articles in the current volume, "Ulcerative Colitis," by E. R. Cullinan and I. P. M. MacDougall, and "The Management of Lesions of the Feet in Diabetics," by R. L. F. Catterall and W. G. Oakley, are as much medical as surgical, and are in line with the editors' policy of laying stress on the indications for operation rather than on technique. The dependence of modern surgery on biochemistry is brought out by Selwyn Taylor in a review of progress in endocrine surgery. L. P. Garrod, in an article on the control of surgical infections, and R. A. Shooter, in another on staphylococcal infection in hospital, illustrate the bacteriologist's contribution to surgical practice. The present position of arterial grafting is concisely stated in a survey of progress in vascular surgery by B. N. Catchpole and R. P. Jepson. These and the other articles in this volume will enable the practising surgeon to keep in touch with the main developments in the ever-increasing field of surgical knowledge.

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A CIVIL SERVANT ON G.P.s

Sir Frank Newsam, formerly Permanent Under-Secretary of State, Home Office, was invited eight months ago by the autonomous G.M.S. Committee of the B.M.A. to investigate general practice in the N.H.S. His terms of reference stressed "deficiencies" and "frustration" connected with the Service. In particular he was asked "to suggest practical modifications or alternative schemes." Sir Frank's report is printed in full in this week's *Supplement*, prefaced by a statement drawn up last week by the Council of the B.M.A., which was specially called to consider the recommendation of the G.M.S. Committee that it should be published. It seems that the decision to invite a retired civil servant to look into alternative methods of providing general medical services under the N.H.S. followed on the inability of a subcommittee of the G.M.S. Committee to reach any satisfactory conclusion on this admittedly difficult matter. To many doctors such a decision will appear to have been a counsel of despair.

Sir Frank's report is of course the kind of able document that highly placed civil servants are well trained to produce. What is remarkable is that he undertook to produce it, because in the third paragraph of his 10,000-word document he writes:

> "From the outset it became apparent to me that it would be beyond my capacity to suggest a scheme which is in any true sense alternative to the one embodied in Acts of Parliament. . . . My own view is that an alternative scheme, or any substantial modifications of the existing scheme, could come about only as the result of an independent and authoritative public inquiry. . . ."

Sir Frank has therefore completely balked the issue he was instructed to grapple with, but cannot be blamed for not doing something he admits was beyond his capacity. The G.M.S. Committee is therefore still without any guidance for alternative plans for providing family doctor services to the people of this country. Quite obviously Sir Frank Newsam was set an impossible task, as within the bare space of nine months he could not be expected to investigate the numerous methods in other countries for providing medical services in social security schemes. And if he had been able to master the details of these he would still have found it difficult to relate them to apparent frustrations suffered by doctors in these countries. Nevertheless it is curious to note the absence of reference to medical services in other countries except, in passing, to New Zealand. It would have been most enlightening if Sir Frank could have analysed the causes of the tripartite *satisfaction* of people, parliament, and profession in the medical services of Norway. Scandinavian countries have a varied and long experience in social security measures, and together represent a field experiment productive of many results that might be applied to our more unwieldy kind of mechanism. Sir Frank's approach is, if we may say so without offence, deplorably insular, and points to little that is not drearily familiar to anyone at all versed in medical politics.

Few readers will find it difficult to pick holes in this, that, and the other statement in the "Newsam Report." What, for example, is one to make of a statement like this: "Money considerations are proverbially fatal to intimate human relationships." Are wives not to have housekeeping money from husbands, or children pocket money from both? And where did Sir Frank learn that: "In former days the general practitioner never took his patients on principle into his full confidence." And what does he mean by the words italicized (by us) in the following sentence: "Nevertheless the medical profession, in years to come, *when their freedom is assured*, may decide that a salaried basis [of remuneration], rightly safeguarded, is best." It is indeed difficult to know whom exactly he is addressing in many parts of his report. He seems in places to be addressing, or at least echoing, his fellow civil servants in the Ministry of Health. "The fundamental problem," he writes, "to be solved is how family doctors can be organized as public servants, paid out of the public purse, without serious detriment to their special character. The first essential is to secure their active co-operation." This is in a report to a committee representing general practitioners who have asked the writer to "suggest practical modifications or alternative schemes" for providing general medical services. And towards the end of the report Sir Frank blithely confesses his inability to do so, thus: "As to the framing of an alternative scheme for providing family doctors' services, that surely is a function of government, on advice tendered by the profession as a whole."

If Sir Frank has completely failed—and the failure is complete—to suggest any alternative schemes, that does not mean to say that his report is quite without

[1] See *Brit. med. J., Supplement*, 1958, 1, 211, 219.

value. Its value lies in the warning given to the profession by a highly able civil servant who, we may be confident, faithfully reflects the mind of the civil servants in the Ministry of Health. His report should be read in conjunction with the evidence given to the Royal Commission on Remuneration of Doctors and Dentists by officials of the Treasury and the Ministry of Health.[1] The warning lies in the first of his "conclusions and recommendations." "It is," Sir Frank writes, "unrealistic of doctors to think of withdrawing from the National Health Service. The inevitable result would be the formation of a fully salaried service." The Council is at pains in its statement in the *Supplement* to add a rider to this implied threat. The profession as a whole, and general practitioners in particular, at least have the report of the Porritt Committee to look forward to, and this committee will certainly profit by a close study of the Newsam Report to the General Medical Services Committee of the B.M.A.

"STRICTLY PRIVATE AND CONFIDENTIAL"

The *Daily Telegraph* of January 5 published an account of Sir Frank Newsam's report that could have been written only by someone who had read it, or had been given the details by someone who had. The *Daily Telegraph's* reputation for accurate reporting was in fact fully sustained. Sir Frank's report was at that time in the hands of members of the G.M.S. Committee, Council, and B.M.A. officials, and of no one else. The first sheet of it was marked in red ink, "Strictly Private and Confidential." For this breach of confidence the person most to blame is the person who informed the *Daily Telegraph* of its contents. It was a cheap and disloyal thing to do. But if the report itself came into the hands of this newspaper we may question the journalistic ethics that ignores the words "strictly private and confidential" on a document that is the private property of a professional organization. It is just as bad as breaking a date line, in fact worse. The *Daily Telegraph* ought to know better.

CHRONIC BRONCHITIS

Sufferers from chronic respiratory symptoms in Great Britain are legion, and the diagnostic label attached to the great majority of them is chronic bronchitis. Yet the difficulty of defining this commonly used term is so great that there is no general agreement on it. The lack of precise aetiological knowledge precludes an aetiological definition; the unspecific character of most of the pathological changes makes it impossible to devise a useful one based on morbid anatomy; and the lack of a clear line of distinction between the earliest phase of the disease and health makes a purely descriptive definition difficult if it is to include this important early phase. Opening a symposium on chronic bronchitis at the meeting of the Association of Physicians in 1952, J. G. Scadding[1] was driven back upon a definition by exclusion: "Chronic bronchitis refers to the condition of those patients suffering from chronic or recurrent cough and expectoration and usually effort dyspnoea, in whom these symptoms are not caused by disease of the lungs, by localized disease of the bronchi, trachea or upper respiratory tract, or by primary cardiovascular disease."

The clinical picture is all too familiar in these islands—the recent survey[2] of morbidity in general practice showed that bronchitis was the disorder that most often required medical attention. Probably in the past, especially in hospitals, one of the end-results of chronic bronchitis—such as emphysema, bronchiectasis, or "myocardial degeneration"—has been the diagnosis attached to many sufferers from this disorder, but the term has for long been in common use on sickness and death certificates, which are the raw material on which the statistician must base his study of incidence. D. D. Reid,[3] discussing the epidemiology of chronic bronchitis, had of necessity to use the definition "that condition which is described as chronic bronchitis by general practitioners when they complete certificates of cause of incapacity of death." According to the published death rates in various countries, the disease so defined is one of temperate, damp, low-lying industrial areas. England and Wales have the unenviable distinction of having the highest death rate attributed to this cause in the world. The crude rate for males is about twenty times that in Scandinavia. This very large difference cannot be entirely due to differing diagnostic fashions, for there is no compensatory excess in deaths registered under some possible alternative diagnoses in Scandinavia. O. W. Christensen and C. H. Wood[4] have recently examined the rates of mortality from bronchitis in England and Wales and in Denmark, and have concluded that though differences in the method of selecting causes of death for statistical purposes and in diagnostic habits in the two countries may account for an important part of the difference in recorded mortality, there is, nevertheless, a real excess in England and Wales of the disease labelled bronchitis.

Even in England and Wales, where there is little reason to suspect great variations in diagnostic fashion, the death rates vary widely, being highest in the

north-western industrial areas and lowest in the southern rural areas.[5] Atmospheric pollution might possibly account for this difference, and indeed in London it has been shown that the mortality is highest in an area just north-east of the centre, where, because the prevailing wind is south-westerly, the atmospheric pollution caused by the vast conurbation may be presumed to be highest. But the social class of the patient is another factor to be considered, for the mortality certified as due to chronic bronchitis in social class V is five times that in class I. In London post-office workers—a homogeneous social group—Reid found that the rate of invaliding from the postal service because of chronic bronchitis was highest in that area—north-east of the centre—where the mortality rate from chronic bronchitis was highest. That there is a correlation between chronic bronchitis and atmospheric pollution in England and Wales must be expected, but Christensen and Wood[4] point out that, though Copenhagen, the most industrialized town in Denmark, has about the same degree of air pollution as an English country town, the mortality rates for bronchitis throughout Denmark are lower than those for rural districts in England and Wales. Differences in air pollution cannot therefore be the sole cause of differences in mortality between the two countries.

Smoking has naturally received attention as a possible causative factor. N. C. Oswald and V. C. Medvei[6] found that among post-office workers 16% of smokers had symptoms of bronchitis, as compared with 9.5% of non-smokers. Convincing evidence of the effect of smoking is provided by the investigation of R. Doll and A. Bradford Hill[7] into the mortality of British doctors. Among male doctors over the age of 35 years the rate of mortality from bronchitis rose steadily from a figure of 0.12 per 1,000 among non-smokers to 0.72 among heavy smokers.

During epidemics of respiratory infections, deaths among those with chronic bronchitis occur with increasing frequency, and their absences from work are also more numerous. The morbid anatomical studies of Lynne Reid[8] have shown how recurrent respiratory infection contributes to the destruction of functioning lung tissue and consequent disability. But the possible role of respiratory infection in initiating the process which leads to the development of chronic bronchitis is at present a matter for speculation. Lynne Reid has based a working hypothesis on the supposition that the essential abnormality is hypersecretion of mucus in the bronchial tree, the downhill course and steady destruction of lung tissue, with development of emphysema, being due mainly to the damage caused by secondary infection at bronchiolar level. She has shown also that these changes can be correlated to some extent with abnormalities seen in the peripheral part of bronchograms.[9]

The emphysema which develops in the chronic bronchitic subject is almost certainly the most common type of emphysema seen in Britain. The pathogenesis of other types is even more speculative that that of the familiar "chronic bronchitis and emphysema." There is good clinical evidence of the existence of a variety which may be termed "primary" emphysema, developing in previously healthy persons. Undoubtedly in a few people the progressive dyspnoea on exertion which is the leading symptom of emphysema develops rapidly in middle age without earlier "bronchitic" symptoms, which arise only after the emphysema is well established. These cases, on the whole, have an even worse prognosis than those associated with chronic bronchitis and are even more difficult to treat, probably because bacterial infection, which is treatable, is of less importance in them.

In the study of chronic bronchitis many methods of inquiry have to be pursued—nosological, clinical, morbid anatomical, microbiological, physiological, epidemiological, industrial, and possibly even immunological and genetic. Within each of these areas of study there are many more unanswered than answered questions, and indeed it is doubtful whether many of the problems have yet been correctly formulated. The recent publication of three books by active investigators in this field from Newcastle upon Tyne,[10] London[11] and Sheffield[12] is an index of the attention which is being devoted to a long-neglected subject. It is to be hoped that within the next few years results of practical benefit to sufferers from this progressively incapacitating disease will emerge.

[1] Scadding, J. G., *Quart. J. Med.*, 1952, **21**, 460.
[2] *Morbidity Statistics from General Practice*, Vol. I (General), 1958, H.M.S.O., London. See *Brit. med. J.*, 1958, **2**, 1459.
[3] Reid, D. D., *Proc. roy. Soc. Med.*, 1956, **49**, 767.
[4] Christensen, O. W., and Wood, C. H., *Brit. med. J.*, 1958, **1**, 620.
[5] Ibid., 1958, **1**, 884.
[6] Oswald, N. C., and Medvei, V. C., *Lancet*, 1955, **2**, 843.
[7] Doll, R., and Hill, A. B., *Brit. med. J.*, 1956, **2**, 1071.
[8] Reid, L. M., *Lancet*, 1954, **1**, 275.
[9] —— *Thorax*, 1955, **10**, 199.
[10] Ogilvie, A. G., and Newell, D. J., in *Chronic Bronchitis in Newcastle-upon-Tyne*, 1957, Edinburgh.
[11] Oswald, N. C., in *Recent Trends in Chronic Bronchitis*, 1958, London.
[12] Stuart-Harris, C. H., and Hanley T., in *Chronic Bronchitis, Emphysema and Cor Pulmonale*, 1957, Bristol.

DISAPPEARING BONE DISEASE

A series of papers[1–5] have recently reported a rare and interesting condition characterized by dramatic but unexplained destruction of bone, and spoken of either as "massive osteolysis" or, more usually, "disappearing bone disease." Isolated reports of cases of this type

have appeared in the literature since the first was briefly described in 1838, but the first useful review of the condition was B. L. Coley's,[6] published in 1950, which summarizes information on four cases from the literature and three hitherto unpublished cases. A later and important review was by L. W. Gorham and A. P. Stout in 1955,[7] which includes information on 24 published and unpublished cases, 7 of them being ones the authors had studied personally. They drew attention to conspicuous vascular spaces at the sites of bony destruction, and suggested that a "haemangiomatosis" was the underlying process in the lesions they had encountered.

The present papers[1-5] add five more cases to the previous 24, and the general features of the condition are now becoming fairly clear. The patients are usually children or young adults, and the two sexes are about equally affected. There is slow progressive absorption of bone over a period of years, though stabilization occurs eventually nearly always. The milder cases show absorption of part of a single bone, while in the more severe cases the lesions progress until all the osseous tissue of one or more bones has disappeared; in 9 of the 29 cases death has resulted from the disease or its complications. The case reported by Blundell Jones and colleagues[2] is of particular interest. Initially the left clavicle and scapula were involved; ribs were eroded, and ultimately recurrent chylous effusion of both pleural cavities developed, and resulted in death.

Gorham and Stout's observation that unusual vascular structures were present in the areas of bone destruction has been confirmed in four of the more recently reported cases, but the exact nature and pathogenesis of the lesion remains obscure. S. M. Milner and S. L. Baker's account[3] suggests that the bone destruction results from local osteoclastic activity. These authors do not regard the vascular structures as neoplastic, and they leave open the question of their relationship to the process of bone removal.

If the condition is in fact a variety of haemangiomatosis, it is very different from the usual angioma of bone. In contrast with "disappearing bone disease," the angiomas are localized and do not spread widely; they may erode part of a bone, but never destroy it in its entirety. Like other angiomatous lesions, they are usually thought to be congenital abnormalities of development rather than benign neoplasms of later onset. But the concept of primary angiomatous lesions of the skeleton appears to be widening. Not only has it been suggested that "disappearing bone disease" is a variety of haemangiomatosis, but H. N. Hadders and H. J. Oterdoom[8] have put forward the view that the less serious and histologically rather different lesion "aneurysmal bone cyst" is really a haemangioma, while G. W. Changus and colleagues[9] have suggested that the long-disputed entity "adamantinoma of long bones" may be a malignant angioblastoma. Further work will be needed to establish the validity of these suggestions.

[1] Butler, R. W., McCance, R. A., and Barrett, A. M., *J. Bone Jt Surg.*, 1958, **40B**, 487.
[2] Jones, G. B., Midgley, R. L., and Smith, G. S., ibid., 1958, **40B**, 494.
[3] Milner, S. M., and Baker, S. L., ibid., 1958, **40B**, 502.
[4] Aston, J. N., ibid., 1958, **40B**, 514.
[5] Branco, F., and da Silva Horta, J., ibid., 1958, **40B**, 519.
[6] Coley, B. L., *Neoplasms of Bone*, 1949, New York.
[7] Gorham, L. W., and Stout, A. P., *J. Bone Jt Surg.*, 1955, **37A**, 985.
[8] Hadders, H. N., and Oterdoom, H. J., *J. Path. Bact.*, 1956, **71**, 193.
[9] Changus, G. W., Speed, J. S., and Stewart, F. W., *Cancer (Philad.)*, 1957, **10**, 540.

RELEASE BINDINGS ON SKIS

The ski-ing season is now in full swing, and among both experts and beginners there will be some who will fall, or catch an edge, or hit some obstruction, breaking an ankle or tibia or even a femur. For these an already expensive holiday will be wasted and probably turned into a financial calamity. To forget to insure against such a happening is folly: the cost of medical treatment, the transport home, and the continued treatment when at home should always be provided for.

The British Ski Club is most anxious to prevent avoidable accidents, and it should be widely known that the majority of fractures of the lower limbs, due to direct or indirect leverage from the skis, can be prevented if some form of modern safety binding is used. Modern "high-pressure" ski-ing—which would not be considered as anything more than downhill skating on skis by those who have experienced deep snow ski-ing in the pre-funicular days—is extremely fast, and should the beginner leave the *piste* and enter the deep snow he will get into serious difficulties, with a distinct chance of breaking his leg. The modern Kandahar binding for fast downhill ski-ing virtually bolts the ski to the boot, allowing almost no movement between the boot and the ski. Only a rigid fixation will give adequate control and allow the skier to have complete command at speed. The average skier, and those who only indulge in this sport for a short time every year and have not the skill and co-ordination of the native expert, must have some mechanical device to release their skis from the foot before a bone breaks.

In the past there has been much scepticism about the value of these devices, and the accident prevention committee of the Ski Club of Great Britain has carried out an investigation[1] to find out just how worth while these safety bindings are. One insurance company paid 180 claims for ski-ing accidents during the 1956–7 season. Out of these, 148 replied to the Ski Club's questionary, and it appeared that 59 claimants were using some sort of safety device. Twenty-seven of these sustained injuries unrelated to their release bindings (from collisions, etc.), while 15 admitted improper adjustment of their bindings. In 10 of the remaining 17 cases the release operated and only minor accidents resulted, while of the final 7 cases 5 were not fully protected by forward and rotational release bindings. It is an illuminating fact that the average cost of all injuries, irrespective of cause, when release bindings were worn was £21, compared with £43 when release bindings were not used.

Probably the most convincing argument for wearing safety release bindings is the percentage of skiers who take to these in successive years. Of first-year skiers only 1.6% wore release bindings, and the figure went

[1] Howkins, J., *Brit. med. J.*, 1958, **1**, 1006.

gradually up to 54.5% for skiers in their sixth season and over. Plainly the more experienced enthusiast eventually, by bitter experience and by observing the plight of others, turns to the modern safety devices. It is also noteworthy that in the 59 claims analysed by the Ski Club no wearer of a release binding directly blamed it in any way at all for the accident.

PEPTIC ULCER IN INFANCY AND CHILDHOOD

The vast literature on the subject of peptic ulceration contains few publications of its appearance in the very young. Yet some post-mortem statistics would place its incidence at between 1 and 1.5% of the causes of infant deaths.[1 2] A greater awareness of the clinical features and of the circumstances under which peptic ulceration is likely to develop in infancy would probably lead to more frequent diagnosis in life and consequent timely and successful treatment. Most often the condition complicates other disorders, of which the commonest are cutaneous burns, injury or disease of the brain, birth trauma or asphyxia, acute infections, and trauma from gavage or instrumentation.[3-6] A. J. Barger[7] has recently confirmed that it may, as in the adult, be "idiopathic."

A history of pain will not often be obtainable in the case of a young infant, though it has occasionally been recognized.[8] Haematemesis or melaena, often copious, is common. Even in the youngest infant, fluoroscopy after the instillation of lipiodol by stomach-tube can sometimes show an ulcer in the duodenum.[7] It is worth bearing in mind that Meckel's diverticulum and duplication of the bowel are not the only causes of severe melaena in infancy. Perforation of an ulcer leads to sudden collapse, often with respiratory difficulty and cyanosis. A straight radiograph of the abdomen will then reveal free gas in the peritoneal cavity, an indication for early laparotomy before peritonitis and paralytic ileus become established. Haemorrhage and perforation may coincide, but, provided diagnosis is prompt, blood transfusion combined with present-day anaesthetic and surgical techniques should be able to cope with even this catastrophe. The possibility of peptic ulcer should be considered whenever an infant, especially if he has one of the conditions already mentioned, unexpectedly collapses or bleeds from the gastro-intestinal tract. Sometimes, also, symptoms arise from the subsequent scarring and pyloric stenosis.

In older children peptic ulcer probably occurs a good deal more often than its frequency of diagnosis would suggest. During the last war it was not uncommon to obtain from young Service men with peptic ulcer a history of symptoms dating back to their childhood or adolescence. Children rarely have the typical ulcer story of hunger-pain eased by food. The symptoms are more often generalized abdominal pain, nausea, and vomiting, while loss of weight is infrequent. Though a barium meal cannot be advised for every child with such common symptoms, the possibility of peptic ulceration is worth considering when symptoms are persistent or frequently recur. The presence of occult blood in the faeces would certainly merit further investigation. The older child, in contrast to the infant, seems rarely to suffer from severe bleeding or perforation, although, as in the adult, such an accident may complicate treatment with corticosteroids.[9 10] In its absence, treatment should follow conservative medical lines. The long-term prognosis is unknown.

1 Bergiund, N., *Acta paediat. (Uppsala)*, 1928, **8**, 323.
2 Benner, M. C., *J. Pediat.*, 1943, **23**, 463.
3 Alexander, F. K., *Radiology*, 1951, **56**, 799.
4 Cushing, H., *Surg. Gynec. Obstet.*, 1932, **55**, 1.
5 Guthrie, K. J., *Arch. Dis. Childh.*, 1942, **17**, 82.
6 Hurst, A. F., and Stewart, M. J., *Gastric and Duodenal Ulcer*, 1929, Oxford University Press, London.
7 Barger, A. J., *Amer. J. Roentgenol.*, 1958, **80**, 426.
8 Bird, C. E., Limper, M. A., and Mayer, J. M., *Ann. Surg.*, 1941, **114**, 526.
9 Good, R. A., Vernier, R. L., and Smith, R. T., *Pediatrics*, 1957, **19**, 95.
10 Lorber, J., *Brit. med. J.*, 1957, **2**, 749.

CINERADIOGRAPHY IN DIAGNOSIS

The term cineradiography usually implies the photography of an *x*-ray fluorescent screen image at 16 or more frames per second. In the past the relatively high cost of the equipment and the high dose of radiation required has limited its use to a few special centres and mainly for research purposes. In the last few years the introduction of electronic means to intensify the fluorescent image has made the technique relatively safe and inexpensive.

Since the process consists merely in photographing a fluorescent screen image, there is no advantage in cineradiography over simple fluoroscopy unless a permanent record is required, or unless the rate of movement of the structures radiographed is such that detail cannot be readily observed before a change in the image has occurred. But the sequence of events in the film can be viewed over and over again until all the details have been studied, and it is undoubtedly valuable for future reference. For both research and clinical purposes there are many advantages in having a permanent record, since the phenomena can be accurately correlated with other findings such as simultaneous pressure records and electrocardiograms.

Before cineradiography can have a place in routine clinical diagnosis it is essential that normal and abnormal states are adequately studied and the findings correlated with data obtained by other means. Clinically it will be used as a routine only when experience has shown that it is the best method of obtaining useful information. (Practically every moving part of the body has been studied by cinematography.[1]) Cineradiography has been used for many years to study deglutition. Recently this subject has been reinvestigated by several workers and in particular by G. M. Ardran, F. H. Kemp, and their colleagues.[2 3] The problems studied have included normal swallowing in infants and adults, abnormal states like acrosclerosis and poliomyelitis, the movement of dentures, the suckling of goats, and mastication and swallowing in the rabbit. This work has provided a background to the fuller understanding of deglutition and

1 Janker, R., *Röntgenologische Funktionsdiagnostik*, 1954, Girade, Wuppertal.
2 Ardran, G. M., and Kemp, F. H., *Acta radiol. (Stockh.)*, 1956, **46**, 446.
3 —— —— and Ride, W. D. L., *Proc. zool. Soc. Lond.*, 1958, **130**, 257.
4 Creamer, B., and Pierce, J. W., *Lancet*, 1957, **2**, 1309.
5 Berridge, F. R., and Gregg, D. M., *Brit. J. Radiol.*, 1958, **31**, 465.
6 Astley, R., and Oldham, J. S., ibid., 1956, **29**, 556.
7 Watson, H., Pickard, C., Lowe, K. G., and Hill, I., *Brit. Heart J.*, 1958, **20**, 459.
8 Greenwood, F. G., *Brit. J. Radiol.*, 1957, **30**, 493.

the dysphagias and has indicated how they may be investigated more fully: they have shown the value of cineradiography both in research and as a routine procedure.

Other parts of the gastro-intestinal tract have also been investigated by cineradiography. Several workers have used the method to examine the normal oesophagus,[4] and others—for example, F. R. Berridge and D. M. Gregg[5]—for examining the abnormal oesophagus. The stomach and intestines have also come under observation. R. Astley and J. S. Oldham[6] consider the method suitable for routine angiocardiography in infants and to have advantages over full-sized rapid serial radiography, while H. Watson and colleagues[7] have explored the possibility of studying the intracardiac circulation. F. G. Greenwood[8] has used cineradiography to differentiate between spasm and fibrous strictures in the urinary tract during treatment of tuberculosis. Though in many of these investigations cineradiography has been exceedingly informative, its value in comparison with that of serial radiography and its use as a routine diagnostic procedure remains to be decided.

SHOCKS FOR PAIN

The report[1] from the department of neurology in Los Angeles that 7 out of 8 cases of chronic pain (due to a variety of causes) were relieved by electro-convulsive therapy may stimulate interest in a form of treatment which is sporadically used in many centres. The author does not say whether these eight cases formed a consecutive series or were selected from a larger number of patients treated in this way. Just as the beneficial effect of E.C.T., in mental disease may be temporary and can be repeated, so 6 out of these 8 cases were treated on two or more occasions. The assessment of benefit is difficult because of the dual nature of pain as a sensory and emotional experience. It is clear, however, that E.C.T. effectively relieves pain in some cases, however few and for however short a time. This is of both practical and theoretical interest. A good many studies have been carried out in America on the effect of electroshock on the emotional responses provoked by experimental conditioning, mainly in rats. In animals with an induced neurosis of the fear and anxiety type electro-convulsive shock diminishes or eliminates the emotional response.[2] This attenuating effect is observed only if actual convulsions take place and not if these are prevented by anaesthesia,[3] and it is influenced by the time allowed to elapse between the acquisition of the emotional response and the start of electroshock treatment, by the number of shock treatments given, and by the spacing of the shocks.[4] Shock treatment alleviates the reactions induced by conflict in cats and seems to break down "neurotic" inhibitions, phobias, and compulsions.[5] It is known that electro-convulsive therapy induces changes in the electroencephalogram. These effects usually disappear within 4 to 8 weeks after the last treatment. Although on the whole little correlation has been shown in the past between the clinical response and the electroencephalographic changes, recent studies[6 7] have shown a limited relationship. The important point in this context, however, is that E.C.T. does in fact cause a demonstrable alteration in cerebral activity: this may be associated with a change in the emotional and behavioural response of the individual to pain, for example, and thus with the breaking of a vicious circle.

[1] Von Hagen, Karl O., *J. Amer. med. Ass.*, 1957, **165**, 773.
[2] Geller, I., Sidman M., and Brady, J. V., *J. comp. physiol. Psychol.*, 1955, **48**, 130.
[3] Hunt, H. F., Jernberg, P., and Lawlor, W. G., *ibid.*, 1953, **46**, 64.
[4] Brady, J. V., Stebbing, W. C., and Hunt, H. F., *ibid.*, 1953, **46**, 368.
[5] Neet, C. C., and Feldman, R. S., *ibid.*, 1954, **47**, 124.
[6] Fink, M., and Kahn, R. L., *Arch. Neurol. Psychiat. (Chicago)*, 1957, **78**, 516.
[7] Roth, M., Kay, D. W. K., Shaw, J., and Green, J., *Electroenceph. clin. Neurophysiol.*, 1957, **9**, 225.

THE EMPEROR'S NEW CLOTHES

The Empire Rheumatism Council is posting direct to general practitioners "Reports on Rheumatic Diseases." The Chairman of the Empire Rheumatism Council gives the following reason for this in Report No. 1: "To expect the busy General Practitioner to keep himself completely up to date in a new and expanding field of Medicine such as rheumatology, in which most advances are announced in highly specialized journals is unreasonable. . . . Research is now proceeding so rapidly in many countries besides our own that we feel that anyone not actively engaged in this field may well be uncertain of the value of new tests and treatments." Hence these E.R.C. reports—distributed by Communications Counsellors International—the first of which have appeared this month. The general homily to G.P.s by the chairman is succeeded by two sides of a quarto page of print on "The Routine Management of Rheumatoid Arthritis." Aspirin, the G.P. is informed, is "the drug of first choice in all early cases." He is advised to seek expert opinion before prescribing "preparations such as phenylbutazone, gold, prednisone, prednisolone, and chloroquin." This seems rather a come-down after the bright promise of hot news from the world front of rheumatology.

The Chairman of the Empire Rheumatism Council is no doubt aware that many of the principal advances in his subject have been recorded in weekly medical journals and also that any other advance of note is the subject of informed comment in the *British Medical Journal* and the *Lancet*. It is therefore pertinent to ask why the E.R.C. has decided to indulge in this curious form of controlled circulation. Along with the brightly produced pamphlets from drug firms the general practitioner will now be compelled to receive E.R.C. pamphlets telling him he can use aspirin for rheumatoid arthritis but should seek expert advice before prescribing anything stronger than this. The E.R.C.'s sheets bear the names of the editors of these reports and the names of expert advisers. Anonymity would have been a more modest and decorous approach and more in keeping with the reputation of the Empire Rheumatism Council.

We believe that the E.R.C. has made a mistake, however excellent its intentions. The Emperor's New Clothes, readers of Hans Andersen will remember, were invisible. The E.R.C.'s quarterly reports might well follow suit.

Drug Treatment of Disease

DRUG TREATMENT OF PNEUMONIA IN ADULTS

BY

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In considering the treatment of patients with pneumonia it is useful to classify the pneumonias in two main groups: specific pneumonias and aspiration pneumonias. While this is not an absolutely satisfactory or theoretically complete classification, it has proved its worth in teaching and as a practical way of thinking about individual patients, especially in relation to treatment.

Classification of the Pneumonias

1. Specific Pneumonias

A. Bacterial:

Streptococcus pneumoniae	Pneumococcal pneumonia
Str. haemolyticus	
Friedländer's bacillus	
Staphylococcus aureus	Often in association with influenza virus
Haemophilus influenzae	
Mycobacterium tuberculosis	

B. Virus:

Measles
Influenza
Psittacosis
Other unidentified viruses
Rickettsia—e.g., in Q fever.

2. Aspiration Pneumonias

A. Diffuse: Bronchopneumonia commonly occurring in elderly chronic bronchitics.

B. Localized: Pneumonia caused by the aspiration of material, usually from the upper respiratory tract. It comprises transient consolidation associated with mildly infected material and suppurative processes of varying severity, including most cases of acute lung abscess.

This classification had its origin in the need to recognize those pneumonias caused by specific bacteria, which could be treated with sulphonamides and later with penicillin. The wider range of effectiveness of the newer antibacterial drugs may perhaps be thought to have lessened the necessity for precise bacteriological identification in all cases. This may be true for the majority of pneumonias, which respond readily to treatment, but a few remain which are still difficult and may be dangerous. The early recognition of these is possible only by a rational approach to the disease as a whole.

The first group is that of the specific pneumonias—that is, those which are caused by the action of a virulent organism on a susceptible host and are therefore classified on a true aetiological basis. There is in addition an important group of pneumonias in which the inflammatory process is able to establish itself in the lung because of the presence of non-specific factors of a mechanical nature. Aspirated secretions or secretions produced locally block major bronchi, causing lobular or segmental collapse, and these areas readily become infected. This is the variety of pneumonia which is called "aspiration pneumonia," and essentially it is infected atelectasis. The above classification into the two main groups is based on that devised originally by Dr. J. G. Scadding.

SPECIFIC PNEUMONIAS

Antibacterial Treatment

The antibacterial drugs which are of practical value comprise penicillin, with which phenoxymethyl penicillin (penicillin V) should be included; the tetracycline group, which will be referred to afterwards as tetracycline, but of which tetracycline itself, oxytetracycline, or chlortetracycline may be used according to preference, although occasionally one of the group may have bacteriological advantages over the others; streptomycin; chloramphenicol; erythromycin; and novobiocin. Others in use are either proprietary mixtures of drugs which have no advantages for practical purposes over single drugs, or are single drugs—for example, oleandomycin—so closely allied to erythromycin that cross-resistance may be produced. The general policy should be to prescribe erythromycin and novobiocin rarely, so that in dire necessity these drugs will retain their effect against bacteria resistant to the drugs in more common use.

The effectiveness of these drugs against the organisms causing the specific pneumonias may be summarized as follows. The pneumococcus and haemolytic streptococcus are almost always sensitive to penicillin. Friedländer's bacillus is sensitive to streptomycin but not to penicillin. The staphylococcus, apart from infections acquired in hospital, is usually sensitive to penicillin, but resistant strains are quite common. This is so important in relation to the overwhelming pneumonia caused by staphylococcal infection in association with influenza virus that this pneumonia is considered later under a separate heading. Apart from this special circumstance staphylococci resistant to penicillin will usually be sensitive to tetracycline. For *H. influenzae* infections penicillin, except in very large dosage, is not likely to be effective, but tetracycline and chloramphenicol will be. Chloramphenicol, which is also effective against staphylococci, is best kept for circumstances in which no other drug can be used because of its depressant effect on haemopoietic tissues. The influenza virus itself is not sensitive to any agent known at present. The virus of psittacosis is sensitive to the tetracycline drugs, and often patients with the pneumonias caused by unidentified viruses also can be treated with apparent effect with these drugs.

Pneumococcal Pneumonia

In general, pneumonias which appear to belong to the specific group should be treated in the first instance according to the following scheme, as though they were caused by the pneumococcus. Before treatment is begun material should be obtained for bacteriological examination. If possible this should be sputum, but if

none is available a throat swab should be taken. In addition it is wise to examine sputum specimens on successive days for the tubercle bacillus. In severely ill patients a blood culture should be carried out. Treatment should be with penicillin unless the patient is known to have developed hypersensitivity to this drug. A dosage of 500,000 units six-hourly will usually be satisfactory, and after the first one or two doses have been given by injection phenoxymethyl penicillin may be substituted. The dosage of this should be 500 mg. six-hourly by mouth. This dosage should be continued for three days after the temperature becomes normal and can then be halved. The treatment should be continued for at least ten days. In the great majority of patients treatment on these lines leads to striking improvement, with return of the temperature to normal or near normal in 48 hours.

When this does not occur, the exact aetiology of the pneumonia needs investigating and it becomes necessary to know the results of the bacteriological examinations set up before beginning antibacterial treatment. By the second day of treatment these results are usually available, and if the organism isolated is not sensitive to the drug being used the appropriate one should be substituted.

Friedländer's Bacillus

If Friedländer's bacillus is found, streptomycin is the most effective drug. This should be given in a dosage of 1 g. eight-hourly by intramuscular injections for two or three days until the patient improves, and then 0.5 g. eight-hourly for a further three days. The danger of this drug, especially in the elderly, is that it may damage the vestibular nerves, causing giddiness and loss of balance. This is specially true of this high level of dosage, which should certainly not be continued for more than this short period of time and stopped earlier on the least suggestion of giddiness. The alternative is to give tetracycline, but it does not seem clinically to be so effective in this sometimes very dangerous infection.

Staphylococcus Aureus

If *Staphylococcus aureus* is isolated, its sensitivity to antibacterial drugs will usually be known also. If it is resistant to penicillin and the patient is not doing well clinically, treatment with tetracycline should begin at a dosage of 0.5 g. six-hourly, which should be halved when the temperature falls. If the organism is also resistant to this drug, then erythromycin in the same dosage should be given.

Other Possible Causes

A further possibility at this point, if the patient has not done well on the standard treatment with penicillin, is that tubercle bacilli may be discovered in the sputum. It is always a wise precaution to examine a succession of sputum specimens for this organism in patients with pneumonia, and especially if they are not doing well. If this organism is found, the appropriate antibacterial drugs should be given. The treatment of this variety of bacterial pneumonia will not be discussed here.

If none of these organisms is isolated and if the disease began as a general illness with evidence of pneumonia developing later, a virus pneumonia is likely. Treatment with tetracycline at the dosage suggested above should be given if the patient is not obviously and rapidly improving.

This scheme of treatment will be successful for most patients who apparently have specific pneumonias. In the few in which it is not effective further investigation is essential and should be carried out in hospital. The main possibilities are (1) that the pneumonia is tuberculous, (2) that the patient has developed an empyema, or (3) that the pneumonia is secondary to a bronchial obstruction such as that produced by a carcinoma. These possibilities should also be borne in mind when the patient improves clinically but resolution is delayed—that is, when abnormal signs or radiographic changes persist for more than four weeks after the beginning of treatment. The further investigation will entail chest radiographs, a thorough search for tubercle bacilli, diagnostic aspiration, and probably bronchoscopy.

The length of time for which antibacterial drugs should be continued varies from patient to patient. Many need no more than the initial ten days of treatment; their sputum rapidly disappears and in three or four weeks they have a normal radiographic appearance. If sputum persists, bacteriological examination of it should be repeated and suitable antibacterial drugs continued. The aim of treatment should be to rid the patient of sputum and to clear the radiological evidence of consolidation. If the radiological changes persist for more than four weeks, then further investigation is required.

Drugs for Relief of Symptoms

The most useful drug to suppress cough is codeine phosphate. Cough which produces sputum should not be discouraged, but tiring, unproductive cough, especially when it occurs at night, may often be reduced with codeine phosphate 60 mg. given before settling the patient for the night. Pleuritic pain can often be relieved by local application of heat, but if this is not successful pethidine 50 mg. to 100 mg. subcutaneously may be given. Measures to relieve pain and cough will usually allow the patient to sleep. When the patient is very restless a useful drug to induce sleep, especially in the elderly, is chloral hydrate, 1 to 2 g. This is often more certain in its effect than barbiturates. Oxygen should be given to all cyanosed patients either by means of a mask or, for severely ill patients, by means of an oxygen tent. The relief of anoxia and the use of specific antibacterial treatment are the most effective measures in preventing the state of circulatory failure which was at one time so much feared in patients with pneumonia. There is now no need to use digitalis as a routine in the treatment.

INFLUENZA VIRUS AND STAPHYLOCOCCUS AUREUS PNEUMONIA

It has been well known for a long time that during influenza epidemics some patients develop a rapidly overwhelming illness and may die in a few hours, with areas of consolidation often widespread throughout both lungs. These are caused by bacterial infection in addition to influenza virus, and the bacteria involved are often staphylococci. These patients present a special problem in the treatment of pneumonia. There is not time to wait for bacteriological information about the drug-sensitivity of the organism. Moreover, the patient often quite rapidly develops a condition of shock, and antibacterial drugs alone may fail to rescue him. In these circumstances it seems best to begin with

antibacterial drugs which are as certain as possible to be effective—namely, erythromycin in case the organism is a staphylococcus resistant to other drugs, *and in addition* chloramphenicol in case the infection is with organisms not specially sensitive to erythromycin —*Haemophilus influenzae*, for example. These should be begun in large doses, say 500 mg. four-hourly, but soon reduced to the more usual dose as the patient improves.

Corticosteroids

In order to try to overcome the circulatory collapse corticosteroids should be given. For a very severely ill patient 100 mg. of hydrocortisone hemisuccinate dissolved in 2 ml. of sterile water should be injected intravenously, and 100 mg. of cortisone acetate given intramuscularly. The cortisone should be repeated four-hourly, and reduced the second day to six-hourly if the patient improves. The dose can be reduced steadily over the next ten days if the patient does well, and after the first twenty-four hours or so can be given by mouth. In addition these patients always need to be nursed in oxygen tents and may require aspiration of secretions by either bronchoscopy or tracheotomy. For this sort of treatment it is almost always necessary that the patient should be in hospital. However, if it is to be successful the treatment needs to be begun early, and this often means before transferring the patient to hospital.

BRONCHOPNEUMONIA OF THE ELDERLY

The treatment is in general similar to that of the patient with a specific pneumonia, but certain features need to be emphasized. The condition is often more serious than most specific pneumonias, because it occurs commonly in patients who have had bronchitis and emphysema for years and who with the onset of infection may develop a state of *respiratory failure*. The mechanism by which respiratory failure develops depends on the reduction of the sensitivity of the respiratory centre. Patients with severe emphysema are anoxic, and severe anoxia depresses the sensitivity of the respiratory centre to carbon dioxide. With infection and pulmonary consolidation, arterial oxygen saturation is further reduced, and the rising level of carbon dioxide in the arterial blood fails to stimulate respiration. As a result the carbon dioxide accumulates in the blood and will lead to increased cerebral blood flow, a rise in the cerebrospinal-fluid pressure, papilloedema, headache, and impaired cerebral function, with restlessness, hallucinations, and eventually coma and death.

Relief of Anoxia

In these anoxic patients the administration of oxygen is essential. It should never be withheld, but it must be used with care, for it may itself be dangerous to patients with respiratory failure. Because of the insensitivity of the respiratory centre to carbon dioxide, respiration in patients with severe emphysema is principally maintained by means of stimulation of the aortic and carotid chemoreceptors by anoxia. If the anoxia is relieved this stimulation fails and the level of carbon dioxide in the arterial blood will rise further. Thus the administration of oxygen may precipitate the effects of carbon-dioxide retention described above. These severe symptoms can often be prevented by giving oxygen at low rates of flow so that anoxia is only partly relieved and the rise in carbon dioxide is not sufficient to cause symptoms. It is often best to begin oxygen therapy with a mask so that 2–3 litres a minute can be given. A close watch should be kept, and if carbon dioxide poisoning does not develop it will be possible to increase the rate of administration of oxygen.

Antibacterial Treatment

There are also certain special features in the antibacterial drug treatment of these patients who have previously had chronic bronchitis. Of the many organisms present in the sputum of chronic bronchitics there are two—namely, *Haemophilus influenzae* and the pneumococcus—which have been shown by special studies to be concerned in exacerbations of the disease, and it is well to direct antibacterial treatment against these organisms when chronic bronchitic patients develop diffuse pneumonia. Because *H. influenzae* is comparatively insensitive to penicillin, this drug alone may not be effective. However, if given in large doses—for example, one million units six-hourly, it will certainly eliminate any pneumococci from the sputum and often inhibit *H. influenzae*. The giving of streptomycin 1 g. twice daily for a few days with penicillin will usually eradicate *H. influenzae*, and this combined treatment should be used if penicillin alone does not produce striking improvement. The danger that streptomycin may affect the vestibular nerve should be specially borne in mind in elderly people and the drug should be used for a very few days. Alternatively a mixture of streptomycin 0.5 g. with dihydrostreptomycin 0.5 g. may be given. This reduces the danger of causing giddiness and in practice does not in a few days of treatment produce the toxic effect of dihydrostreptomycin—namely. deafness. If these drugs fail, probably the best alternative treatment is with tetracycline at the dosage previously suggested.

The most effective drug in the treatment of *H. influenzae* infections is chloramphenicol, and were it not for the danger of aplastic anaemia this drug would be of great value. It is probably best avoided because many of these patients are likely to have recurrent episodes of this sort and repeated use of this drug is dangerous. However, there is no doubt that occasionally in very severe illness its great effectiveness and comparative freedom from immediate side-effects such as the gastro-intestinal upsets so common with tetracycline should outweigh the small chance of its disastrous toxic effect.

Antispasmodics

Bronchodilator drugs are nearly always of value to these patients. Ephedrine is usually the most effective. and it may be given in the morning and early afternoon in a dose of 60 mg. An intravenous injection of 0.25 or 0.5 g. of aminophylline may be given at night instead of more ephedrine, which is apt to keep the patient awake. In elderly men ephedrine may cause retention of urine, and an alternative for these patients is choline theophyllinate (oxtriphylline, "choledyl") in doses of 200 mg. six-hourly. Frequent inhalations of 1% isoprenaline (two- or three-hourly) are often very valuable. Particular attention should be given to encourage the patient to cough and get up his sputum. With a very ill patient this will have to be done gently, and a few minutes each hour during which his chest is held and he is encouraged to cough may be all that is possible at first. In patients who are too ill or too

drowsy to cough up their sputum repeated intravenous injections of nikethamide 8 to 10 ml. are often life-saving. As the patient becomes less severely ill more vigorous measures to produce effective coughing may be begun, and later tipping with the foot of the bed raised may be combined with percussion of the chest wall.

It is very dangerous to administer sedatives to these patients. Barbiturates may cause severe respiratory depression, and morphine may be fatal. If sedation of a restless patient is required, paraldehyde 5 ml. intramuscularly is the best drug and should not be repeated. It is well worth remembering that the depressant effect of morphine, pethidine, or methadone can be reversed at once by the intravenous administration of nalorphine 10 to 20 mg.

As soon as his general condition permits the patient should be allowed out of bed and encouraged to move about as much as he can. Treatment with postural coughing and antibacterial drugs, either penicillin or tetracycline, should be continued until maximal clinical and radiological improvement is obtained. Patients with chronic bronchitis will often be left with some sputum, and it is worth while in such patients to persist with treatment for six weeks or longer in order to reduce as much as possible the amount and purulence of the sputum.

LOCALIZED ASPIRATION PNEUMONIA

The milder varieties of this are common in people with catarrhal infections of the upper respiratory tract and such conditions as chronic sinusitis. They may reveal themselves by fever and localized rales in a patient suffering from a severe cold. Often no special treatment is necessary, but, if cough and sputum persist, antibacterial treatment for a few days as described for the specific pneumonias will usually suffice. This should be combined with postural drainage and coughing. This means that the patient should lie in a position which will tend to drain sputum from the infected part of his lung into the trachea, from which it can be expelled by coughing.

In this relatively mild illness the patient should carry out this procedure for half an hour three times a day, but in worse cases for much longer periods. In the more severe forms, in which pulmonary suppuration develops and which include acute lung abscess, although the treatment is on essentially similar lines with postural drainage and antibacterial drugs, it is probably wise for the patients to be treated in hospital because of the need to ensure as complete resolution as possible and the likely necessity of investigations such as bronchoscopy and bronchography.

[*Runder Photo Inc., St. Louis*

The above photograph of the minor operating theatre of the Johnson-Rand Surgical Pavilion of the Barnes Hospital, St. Louis, U.S.A., was published in May, 1933, in the *Decorator*, and is reproduced here by permission of the editor.

antibacterial drugs which are as certain as possible to be effective—namely, erythromycin in case the organism is a staphylococcus resistant to other drugs, *and in addition* chloramphenicol in case the infection is with organisms not specially sensitive to erythromycin —*Haemophilus influenzae*, for example. These should be begun in large doses, say 500 mg. four-hourly, but soon reduced to the more usual dose as the patient improves.

Corticosteroids

In order to try to overcome the circulatory collapse corticosteroids should be given. For a very severely ill patient 100 mg. of hydrocortisone hemisuccinate dissolved in 2 ml. of sterile water should be injected intravenously, and 100 mg. of cortisone acetate given intramuscularly. The cortisone should be repeated four-hourly, and reduced the second day to six-hourly if the patient improves. The dose can be reduced steadily over the next ten days if the patient does well, and after the first twenty-four hours or so can be given by mouth. In addition these patients always need to be nursed in oxygen tents and may require aspiration of secretions by either bronchoscopy or tracheotomy. For this sort of treatment it is almost always necessary that the patient should be in hospital. However, if it is to be successful the treatment needs to be begun early, and this often means before transferring the patient to hospital.

BRONCHOPNEUMONIA OF THE ELDERLY

The treatment is in general similar to that of the patient with a specific pneumonia, but certain features need to be emphasized. The condition is often more serious than most specific pneumonias, because it occurs commonly in patients who have had bronchitis and emphysema for years and who with the onset of infection may develop a state of *respiratory failure*. The mechanism by which respiratory failure develops depends on the reduction of the sensitivity of the respiratory centre. Patients with severe emphysema are anoxic, and severe anoxia depresses the sensitivity of the respiratory centre to carbon dioxide. With infection and pulmonary consolidation, arterial oxygen saturation is further reduced, and the rising level of carbon dioxide in the arterial blood fails to stimulate respiration. As a result the carbon dioxide accumulates in the blood and will lead to increased cerebral blood flow, a rise in the cerebrospinal-fluid pressure, papilloedema, headache, and impaired cerebral function, with restlessness, hallucinations, and eventually coma and death.

Relief of Anoxia

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THE WELFARE OF CHILDREN IN HOSPITAL

A memorandum, here abbreviated, based on evidence submitted by a subcommittee of the British Paediatric Association in February, 1958, to a subcommittee of the Central Health Services Council under the chairmanship of Sir Harry Platt.*

Changing Pattern

In recent years the pattern of disease in children has changed and with this there has been a considerable change in the work and the outlook of paediatricians, a change which is perhaps not universally appreciated by other doctors who received their paediatric training in what is almost a different era.

Until recently death in childhood was mainly attributable to pneumonia, tuberculosis, and other infectious diseases. To-day deaths among babies in the first month of life are as numerous as deaths in the whole of later childhood. As a result the paediatrician has become more intimately involved in the problems of the newborn baby, and in collaboration with obstetricians and other colleagues in the maternity services is obtaining a better understanding of the causes operating before, during, and after birth of conditions leading to death in *early infancy*.

In attempting to reduce mortality in *later childhood* the paediatrician's interests are turning more and more to the prevention or cure of leukaemia and other "cancers," congenital malformations, and accidents, as well as to a better understanding of a large number of rare but recently recognized diseases. Although infectious diseases are less frequently fatal, they are by no means conquered.

To an increasing extent the paediatrician's life is concerned not with potentially fatal disease but with disorders which, while seldom fatal, do cause serious disablement and unhappiness in childhood. Many chronic or recurrent bodily disorders of childhood as well as what was called "nervous debility" were not long ago considered to have a purely physical basis and were treated symptomatically. To-day there is a growing understanding that these bodily disorders may have their origin in emotional as well as physical disturbances and the prospects of prevention as well as cure have improved. In addition to children with bodily disorders, the origins of which are found to be in emotional and social difficulties, the paediatrician has referred to him by his colleagues many children with more strictly psychological problems.

The paediatrician's interests have also been redirected in another important aspect—that of preventive medicine. The prevention of most of the nutritional disorders and many of the infections of childhood is both understood and applied; the prevention of accidents is actively pursued and has already shown good results. A natural development has been the paediatrician's growing interest in the possibilities of preventing disease in adult life. This is of particular importance in relation to the prevention of mental illness and emotional disturbances in later life.

Child in Hospital

Recent advances in the welfare of children in hospital have in part followed from these changes in the interests of the paediatrician. The children's physician is conscious of the fact that his interest in patients is not limited to the times when they are in a hospital ward. He is equally conscious of the lasting importance which a stay in hospital may have on a child's life.

It is recognized that the admission of a young child to hospital, involving separation from home, may be a misfortune quite apart from the misfortune of illness itself. Even where a young child is concerned the misfortune is not often serious, especially if the stay in hospital is short. The older child seldom suffers any lasting ill effects. None the less a thorough understanding of the problems involved by those responsible for the care of children in hospital is essential if the risks of emotional (and sometimes physical) damage are to be minimized.

Avoidance of Admission to Hospital

Admission of a young child to hospital should not be lightly undertaken, and, when possible, alternative arrangements for his treatment or investigation should be made. Empty beds in the children's ward are as much a matter for congratulation as empty beds in a smallpox hospital, although in either case beds must be available to meet the peak demand.

We consider that arrangements for admission through emergency bed services or through casualty departments are far from ideal. Wherever possible the question of admission should be discussed by direct consultation between the family doctor and hospital doctor, if possible the consultant.

Where a consultant paediatrician's responsibilities cover a large area he will seldom be readily available by telephone. Greater ease of consultation with the family doctor is one of the many advantages which would follow the appointment of a second consultant paediatrician to regions at present served only by one (Gairdner, 1956).

The statutory home nursing service is not always used to the fullest extent. The development of this service in Rotherham and elsewhere and the St. Mary's Hospital (Paddington) Home Care Scheme for sick children are worthy of study. The co-operation of surgeons should also be sought. The period of admission to hospital for certain operations (such as repair of hernia in babies) can sometimes be reduced by careful organization. Admission for the day only or at the most a few days is already arranged in a number of hospitals.

Hospital Accommodation

Children's blocks in large general hospitals should be as self-contained as possible. All children's beds should be gathered in a single ward unit or series of units with a consultant paediatrician in charge of the department and its general ward arrangements although the clinical responsibility for individual cases may be that of other physicians and surgeons. Medical and surgical cases can be advantageously combined in one ward and there should seldom be any need to transfer a child from one ward to another. Neither children nor adolescents should be admitted to adult wards.

Accommodation should be made available wherever possible for the mothers of infants and toddlers, preferably with the mother sleeping in the same room as her child (such accommodation should not be restricted to nursing mothers). In many hospitals, where provision of this kind is not possible, night accommodation could be found for mothers who are prepared to care for their children by day. Accommodation allocated to mothers in hospitals should include a communal sitting-room. Many mothers who are employed or who have other children are unable to leave home to care for an infant in hospital, but this is not a justifiable argument against providing the service for those who can take advantage of it.

The problem of adolescents in hospital is a subject which requires special study. In the planning of new hospitals their needs should be considered with a view to providing separate wards if the number of adolescents requiring admission warrants it.

*Members of subcommittee: Dr. Reginald Lightwood (Chairman); Professor W. S. Craig; Dr. C. C. Harvey; Dr. D. McCarthy; Dr. R. Mac Keith; Dr. C. Pinckney; Dr. J. P. M. Tizard (Secretary).

Unless the parents or general practitioner object a child should, whenever possible, be *readmitted* to the same hospital and to the same ward. Not only will previous records, *x*-rays, etc., be immediately available, but, more important, the child will be known to the staff and the staff and hospital to the child. Emergency bed services should be instructed to inquire about previous admissions when requested to arrange for a child to be taken into hospital.

There is a need for a special study of the necessity for the existence of long-stay hospitals and convalescent homes in the arrangements for health services for children. In future, accommodation for infectious fevers should be made available within a general hospital or children's hospital. Paediatricians should gradually assume responsibility for children's beds in existing fever hospitals.

There must be adequate space for recreation and for eating meals out of bed. Facilities for open-air treatment and recreation are essential and should wherever possible be in close proximity to the ward. Gardens are preferable to balconies.

It is of the greatest importance that separate offices should be provided for the ward sister and house officer in order that parents can be interviewed in privacy and records written without unnecessary disturbance.

A treatment room for minor surgical procedures, etc., is a necessary adjunct to a children's ward.

The provision of facilities for visitors (see below) and the provision of space for prams must also be taken into consideration.

Admission to Hospital

The doctor concerned must accept responsibility for appropriate explanation to the mother and her child of the need for admission to hospital and of the proposed investigation and treatment, but additional explanation by the almoner can often be helpful. The provision of leaflets explaining life in the hospital is also to be recommended. The co-operation of surgeons should be sought in making similar arrangements for the admission of their patients.

We believe that the fathers of children should be consulted as often as possible before admission to hospital is arranged. They are the legal guardians of their children and nothing should be allowed to detract from their authority.

Whenever possible the child should see the ward and meet the sister in charge prior to planned admission. An opportunity should be found for ensuring that the mother is able to explain to her child the reasons for his admission to hospital and to tell him truthfully that she is going to leave him there. It is a common experience to find that parents lie to their children on these occasions to avoid a painful scene. These are matters which can be dealt with in a leaflet.

Consideration should be paid to the wording—too often abrupt and impersonal—of the notice cards sent to parents requesting admission of children on waiting-lists.

Avoiding Delays

Children's wards should have their own admitting system. Delays should be avoided and the child should be welcomed on the ward by a senior member of the nursing staff within a few minutes of his arrival at the hospital. Administrative arrangements should be reviewed to make it possible for the mother to visit the reception or records department for necessary documentation after she has left her child in the ward. It is of obvious importance how the child is parted from his parents. Admission procedures within the ward should be unhurried; the mother and child should have plenty of time together to discover the lay-out of the ward. The mother should assist in putting the child to bed.

The ward sister or her deputy should inquire about the child's habits, his dietary likes and dislikes, the expressions he uses for emptying his bladder and bowel and so on. She must then explain to the child the ward routine so far as it concerns him, visiting arrangements, toilet facilities, etc. Wherever possible the child should retain some of his own possessions and clothing in hospital.

Children's likes and dislikes vary enormously. It is not the duty of the hospital staff to modify a child's dietetic habits during a short stay in hospital unless these are directly related to his illness. The dietary needs of children should be considered separately from those of adults in general hospitals. It should be a special responsibility of someone on the catering staff to ensure that the children are provided with the food ordered by the ward sister.

Education

Not all hospital authorities are aware of the obligations imposed by the 1944 Education Act on local education authorities to make provision for the teaching of short-term cases in hospital. The local education authority can also be requested to provide nursery instruction for children under school age. The emotional strain of admission to hospital even for short periods may in the case of older children be increased if they feel that they are missing school work.

The importance of scholastic examinations and the time needed to study for them is far too easily brushed aside by keeping children in bed or in hospital, especially at the age of 10 or 11 years. The parents should be encouraged to consult with their child's own class teacher, so that he can arrange suitable work for the child and if possible visit him personally. Examinations can sometimes be taken in hospital. But we strongly advocate regular daily attendance by a special teacher which is in many respects more satisfactory than *ad hoc* arrangements for individual children.

In large children's hospitals or departments the educational needs of children under 5 years should ideally be in the care of a trained nursery school teacher.

Recreation and Religion

There is no justification for neglect of recreational facilities even in children's wards for acute diseases. Toys suitable for each age group should be provided, with the necessary cupboard space (hospitals abound in 200-piece jigsaws, but rarely offer a 20-piece wooden jigsaw for little children). Children's libraries should be brought up to date, and kept up to date in terms of quality, variety, and age range. It should be possible to find voluntary helpers to assist in providing suitable recreation for the child.

The visiting by voluntary workers is particularly important in long-stay country hospitals in which visiting by parents may be infrequent. It is essential that the work of these volunteers should be under the general supervision of and with the approval of the sister. Occupational therapists give great assistance in particular cases, especially in long-stay hospitals.

Ideally the ward sister should conduct evening prayers if she can do so with enthusiasm and conviction. This is especially important for children coming from homes with religious background. The Agreed Syllabuses worked out under the Education Act point the way to the common ground enjoyed between denominations. Consideration should be given to the appointment to children's wards of chaplains who have an interest in or aptitude for children.

Painful Procedures

Certain investigations and treatment may occasionally be painful or alarming; consultants and ward sisters should review from time to time the necessity for such procedures. For example, the administration of oral penicillin has largely replaced the painful injections previously necessary.

The advice of the anaesthetist should be sought in considering the use of local or general anaesthesia for necessarily painful procedures. The doctor who is to carry out any treatment, anaesthetic, or investigation should always give an explanation to the child, truthful, but suitable to his years.

The structure of the ward and ward furniture must be such as to minimize the risk of physical danger. However, management committees must be encouraged to appreciate that, in the children's best interests, those caring for them in hospital must be prepared to take some risks just as their parents do at home. Moreover, the ward sister must not be made to feel that she is personally responsible for all accidents. This leads to an atmosphere of fear and disapproval and to a lack of free and open discussion on the causes of accidents.

Visiting

Parents should be encouraged to visit children of all ages as much as possible. Daily visiting should not be considered obligatory, but its importance especially for those under 5 years of age should be emphasized. In most children's hospitals daily visiting is now permitted, but when this is restricted to certain hours the ward sister must be ready to make exceptions in the case of individual parents and children. Moreover, there should be no set limit to the length of visit; one hour may well be not long enough, especially for the younger child. However, there is much to be commended in unrestricted visiting, and where this has been tried it has not been found to impose a serious strain on the nursing staff. We wish to emphasize that facilities for anything less than daily visiting are to be condemned.

There are occasional children in a ward who, no matter what arrangements are in force, are not visited by parents for one reason or another. These children require special but not too obtrusive consideration—for example, visits from members of the W.V.S. or N.C.S.S.

Consultants should be ready to permit parents to take their children out for the day or home for the week-end where it does not interfere with treatment or investigation, despite the effect on the bed occupancy rate.

Visiting should be permitted in fever hospitals.

Liaison

The importance of keeping in touch with parents, general practitioners, local health authorities, and other paediatricians concerned with the welfare of the child cannot be overestimated. It should be considered the privilege of the consultant paediatrician or surgeon to report progress personally to parents when they visit the ward and not to delegate this duty to the house officer, although in most cases the house officer, sister, and almoner should be present. The value of these arrangements has been proved in practice.

A ward sister's duties necessitate much clerical work, and the provision of some secretarial help would be extremely valuable. This would be more easily arranged if shorthand-typists were attached to individual departments of a hospital rather than belonging to a central secretarial pool. As an alternative to secretarial assistance we suggest that there is much to be gained in the employment of sisters' aids. These members of the staff are girls of 17 years of age who have been accepted as student nurses by hospitals and who will begin preliminary training at the age of 18 years.

A parent should always accompany a child to another hospital, but if this is impossible the ward sister should assure the child that his parents will not lose him. Small cars carrying out one duty at a time should be employed. It is sometimes forgotten that children having to wait during day visits to strange hospitals need feeding.

Surgical and Psychiatric In-patients

All that we have said regarding the care of children in hospital applies with equal emphasis to those admitted for surgical treatment or investigation. The welfare of these children is sometimes in danger of being overlooked; the staffs of surgical wards do not always share the recent change of attitude to children in hospital. The avoidance of unnecessary admission for operation has already been mentioned. Special consideration should be given to the frightening circumstances attending admission in accident cases, for acute major surgery, or for ear, nose, and throat operations. Whenever possible suitable explanation should be given to these children; for instance, they can be assured that bleeding is not dangerous. The importance of effective premedication should not be forgotten when urgent or unplanned surgical procedures are necessary. The parents should when possible be present when a child recovers from general anaesthesia.

The lack of sufficient suitable in-patient accommodation for emotionally disturbed and mentally ill children is a serious gap in the present health service. In centres large enough to justify it there is a need for psychiatric observation wards in close association with paediatric units. These wards should be under the supervision of child psychiatrists and staffed by nurses with a knowledge of child health and trained in mental health.

Discharge from Hospital

Before a child leaves hospital an explanation should be given by the doctor in charge and preferably to both parents on what happened to the child while in hospital and about his present condition. Where behaviour problems at home are expected these should also be explained.

A full report containing recommendations for future treatment should be sent to the family doctor as soon as possible (supplemented when necessary by a telephone call). Appropriate information should with the consent of the parents also be provided for the local health authority and education authority to avoid the all-too-common occurrence of conflicting advice to the parents.

Out-patient and Casualty Departments

In order to minimize the time that parents and children are kept waiting an efficient appointments system must be maintained.

In all large out-patient departments visited by children there should be a receptionist to whom parents are directed immediately on arrival. She is able to help those who do not know what to do, nor whom to ask, and to whom the nursing staff are often too busy to attend.

The children's out-patient department should contain the following: (1) A waiting-room of adequate size, warmth, and general comfort with a play space and provision of toys, magazines, etc. (2) A cafeteria. (3) Suitable toilet accommodation. (4) A telephone for the use of parents. (5) A separate and warm undressing and weighing room for the babies and toddlers, who are too often exposed to infectious disease from older children (whooping-cough is a particular menace). (6) Undressing cubicles for older children with facilities for weighing and urine collection. When required, a cubicle may be set aside for a mother to breast-feed her infant. (7) A separate consulting-room for each doctor, in order that parents may be interviewed in privacy.

Ideally in a general hospital the sister in charge of the children's ward should also be responsible for the out-patient department, and the nursing staff should also be interchangeable.

The sight of bewildered parents and tired children trying to find their way to *x*-ray and pathology departments, etc., in large hospitals is all too common. Escorts should be provided, and their duty would be suitable for sisters' aids. The almoner should be available at the times of children's out-patient clinics for consultation with the paediatrician and for interviews with the parents.

To-day the special needs of children in casualty departments are often ignored. In fact, a child is often exposed to unpleasant experiences due to the presence of aged patients, the unconscious and the bleeding, or to frightening experiences resulting from often necessarily hurried treatment and the fears of the unknown.

The paediatrician in a general hospital should have a share in the administrative arrangements for the casualty department. We also recommend that in large hospitals a senior surgeon should be responsible for the running of the

(Continued at foot of next page)

To-day's Drugs

With the help of expert contributors we publish below notes on a selection of drugs in current use.

Ultandren (Ciba).—Fluoxymesterone is the 9α-fluoro-11β-17β-hydroxy derivative of methyltestosterone, supplied in tablets of 1 and 5 mg. It appears to have precisely the same anabolic and androgenic actions as testosterone and is effective orally. Its potency is considered to be five times or more that of methyltestosterone by mouth—and therefore about the same as that of testosterone propionate by intramuscular injection.

The principal indications are male hypogonadism, whether congenital or acquired, and, in the female, the palliation of inoperable breast cancer. For the remaining conditions for which androgens are sometimes used—menstrual disorders, osteoporosis, delayed healing of fractures, and debilitated states in which stimulation of protein anabolism is desired—fluoxymesterone is not the agent of choice because of its high virilizing potency. For these conditions the relatively non-virilizing androgens (such as methylandrostanolone and 17α-ethyl-19-nortestosterone) are preferable. The average daily dose is 1–10 mg., but for carcinoma of the breast up to 20 mg. or more daily may be required. With long-continued treatment at high dosage hypercalcaemia and retention of salt and fluid may occur. The former is an indication for discontinuation of the drug, the latter for reduced salt-intake and diuretics.

N.H.S. basic price: 100 tabs. 1 mg., 14s.; 100 tabs. 5 mg., 62s. 8d.

(Continued from preceding page)

department. The post of casualty officer is an extremely exacting one, and yet it is often filled by an inexperienced newly registered doctor.

Separate waiting and recovery rooms should be provided for children. An anaesthetist should be readily available when treatment is likely to be painful.

The almoner attached to a children's department has a very special contribution to make to the welfare of patients attending out-patient sessions and admitted to the wards. Her contribution to the work of a paediatric team consists in the understanding appraisal of economic, family, domestic, and social considerations with a bearing on medical aspects. The services of an almoner are particularly valuable in dealing with children referred on account of emotional and behaviour problems. At present some hospitals are still without any establishment for almoners, whose valuable service is thus denied to children. Establishments should be provided in such hospitals.

Hospital Subcommittees on the Welfare of Children

Where children are treated in general hospitals their interests may be relatively neglected in comparison with the interests of the more numerous adult patients. We recommend that the board of governors or hospital management committee of a general hospital should set up standing subcommittees of lay, paediatric, surgical, and nursing members to consider the total well-being of children in their hospital.

Many of the recommendations made in our report are for refinements of practice desirable in hospitals where the standards of care of children are already high. Many paediatricians, however, work in hospitals where the facilities for the welfare of children are deplorably low. We urge that special consideration should be given to these less favourable hospitals.

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Correspondence

Hospital Sterilization

SIR,—We have read your special correspondent's account of the recent conference at Southampton on "Hospital Sterilization," together with your leading article on the same subject (*Journal*, December 27, pp. 1589 and 1582). We think it will be of interest to your readers to know that in this unit during the last six months a system of central sterile supply, using double-thickness linen packs, has been in operation for surgical instruments and dressings used both in the operating theatre and in the wards. This has led to the complete elimination of the use of "boilers," antiseptic solutions, and drums, both in wards and in operating theatre, since all sterile material is now autoclaved.

An unselected proportion—10% of the packs—has been sampled bacteriologically (*a*) immediately after removal from the autoclave and (*b*) after three weeks' storage in a dry cupboard, no cardboard boxes or special containers being used. The result of the experiments so far have completely justified the change in method, and in particular have shown that it is safe to store such sterile material for a period of up to three weeks without any special precautions.

Apart from questions of sterility, the method has shown certain other advantages in a hospital such as this where due reliance must be placed on part-time and partly trained staff. The assembling of packs, the dressings in which have been made of standardized sizes, can be accomplished during normal working hours by unskilled labour. The provision of a sufficient supply of sterile packs containing both instruments and dressings has meant that there is no delay in preparing for a dressing at any time of the day or night in the wards. Similarly, the laying-up time in the operating theatre is greatly reduced. It has been our practice in carrying out ward dressings to dispose of contaminated dressings into an ordinary grocer's paper bag, which is closed and removed from the ward before proceeding with the next dressing.

From the administrative point of view, savings have been effected by the elimination of drums, the elimination of the costs of operating boilers in the wards and theatre, a reduction in wastage of dressings, and an increased life for rubber gloves, as they do not need sterilizing so long when they are not in a drum. An additional cost, however, has been the provision of extra instruments so that a sufficient number of sterile instrument packs may be always available. Over all, however, a very considerable economy is effected both financially and in staff time.

No difficulty has been experienced in training the nursing staff in the new technique.—We are, etc.,

Plastic Surgical Unit,
Leasowe Hospital,
Moreton, Cheshire.

D. A. KERNAHAN.
J. I. GIBSON.
J. K. CAMERON.

Epistaxis in Hypertension

SIR,—Dr. J. R. A. Mitchell (*Journal*, January 3, p. 25) gives an account of the incidence of nose-bleeding in patients suffering from high blood pressure. From the documents of 374 patients who attended the Radcliffe Infirmary and were found to have hypertension he found

a history of nose-bleeding recorded in 4.5%, but surmised that, since the patients were not known to have been specifically asked about it, the true incidence was probably much higher. That this surmise is correct is shown by some figures I prepared for a meeting of the Section of Oto-rhino-laryngology at the Annual Meeting of the B.M.A. in 1957, and since these figures have not been published I thought they might interest your readers. From the patients attending my hypertensive clinic, 200 cases, all of whom had initial systolic blood pressures of at least 200 mm. Hg, were specifically asked if they had in recent years suffered from epistaxis, and 46—i.e., 23%, replied in the affirmative. In order to see whether there was much relationship between the height of the blood pressure and the tendency to bleed, 69 patients whose systolic blood pressure had been recorded as 250 mm. Hg or more were analysed separately. A history of nose-bleeding was obtained in 20 (29%) of them.

Nose-bleeding has often been called a safety valve for hypertension, and evidently the general public think so too, for a remarkable number of these hypertensive patients who had never suffered from nose-bleeds said that "they often wished that they had." One was not, however, much impressed with the efficiency of a safety valve which in 70% of the most severe cases of high blood pressure never worked at all, and in the remainder only quite occasionally.

One was also interested to see how effective treatment of the hypertension had been in preventing further attacks of this unpleasant symptom. Naturally no accurate comparison could be made, since the duration of the malady before treatment was undertaken was quite unknown, but it seemed likely to have been at least as long as the treatment period. Most of the patients had been treated with ganglion-blocking agents, with varying success. Of the 69 severe cases 10 (14%) had further epistaxis despite the treatment. Only in a few instances did repeated nose-bleeding before treatment cease dramatically afterwards. But when it did the patients were very grateful.—I am, etc.,

Newcastle upon Tyne, 3. H. A. DEWAR.

"Arthripax" and Purpura

SIR,—I have been stimulated by Professor Robert Platt's note on purpura following "arthripax" (*Journal*, December 27, p. 1577) to record a similar but fatal case which I saw in 1955. This was a lady of 62 who had chronic arthritis in her right knee for which she was given arthripax. After a fortnight she developed severe purpura, especially on the legs, but also on the arms and face. She had haemorrhages on the tongue and haematuria. She was admitted to hospital, where her blood count showed: haemoglobin, 65%; W.B.C., 3,000 (polymorphs 28%, lymphocytes 72%); platelets, 30,000. She died six days after admission despite blood transfusions, etc. At necropsy there were widespread haemorrhages including an extensive subdural haemorrhage. Like Professor Platt, I felt the most likely cause of her purpura was the salicylamide, though I had no means of confirming this. I might add that within the last few weeks I have seen a case of purpura provoked by aspirin, though this is in my experience very uncommon.—I am, etc.,

Leeds, 2. F. F. HELLIER.

Unstable Diabetics and Lipodystrophy

SIR,—Just two stories, evoked by the paper by Drs. Ronald G. Paley and Mary H. Scott (*Journal*, November 29, p. 1331), concerning the problem of the role of the insulin lipodystrophies in determining instability in diabetics[1-3]:

An adult diabetic woman is sent for "unstable diabetes." She has an enormous hypertrophy in the right thigh; the left one is normal. For months, while on the same diet and without a single change of her insulin dosage, from Monday to Saturday inclusive, her urine has shown glycosuria +++ and ketonuria; on Sundays she always experiences severe insulin reactions, including hypoglycaemic comas. When asked, she says that during the week she gives herself her injections, on the right side; on Sundays, the day of rest as everyone knows, her husband gives the injection, into her left thigh. After a few days with the injections correctly given in normal sites, she becomes perfectly controlled by a third of the previous dose of insulin.

A woman, diabetic since childhood, has experienced 22 diabetic comas and innumerable episodes of keto-acidosis. From the moment when the lipodystrophies are taken into consideration, perfect control is obtained with half the previous amount of insulin. This control has now been maintained without a single incident for more than four years.

Similar stories are heard several times a week in a diabetic practice. One never takes a sufficient time to teach diabetics the correct technique for injecting the insulin. I am convinced that the vast majority of unstable, "brittle" diabetics are wholly due to insulin lipodystrophies, unobserved by the doctors, neglected by the patients.—I am, etc.,

Paris. HUBERT CHIMÈNES.

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Cyclic Vomiting

SIR,—In your annotation on the blood sugar in cyclic vomiting (*Journal*, December 27, p. 1585), you say that the exact pathogenesis has not yet been determined. Yet in the next sentence you mention the theory that it is a manifestation of epilepsy. It is sad that this theory has not yet gained general acceptance, for it fits the facts and leads to cure of the condition and prevention of much illness and even loss of life. Since I first mooted this idea in your correspondence columns (*Journal*, November 13, 1954, p. 1166), confirmation has been forthcoming.[1 2]

However, my main reason for writing is to correct the statement that this disorder is prevalent among only children. This has, I suspect, been copied from textbook to textbook and has never been checked since the medical profession became aware of the value of medical statistics. In a series of 27 cases I found that the distribution of the numbers of children in the family (including the patient) was: One, 25.9%; two, 48.2%; three, 18.5%; four, 3.7%; five, 0%; and six or more, 3.7%. At the same time I analysed the figures for 361 consecutive new out-patients and found the following distribution: One, 26.3%; two, 40.7%; three, 15.8%;

four, 8.9%; five, 4.7%; and six or more, 4.4%. I hope that anyone else who has such figures available will be stimulated to publish them.—I am, etc.,

Bath. HUGH WALLIS.

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Medicine on Television

SIR,—It is with understandable reluctance that I prolong the correspondence on medical television. The attendance at the Royal College of Surgeons (*Journal*, November 29, p. 1351) was small and dwindled as green-faced zealots retreated through the doors sickened by what they saw; in television jargon "reacting unfavourably." Those who could watched with mixed feelings a women delivering her child, and saw the poor little creature arrive, eyes gummed up and hair plastered with natal slime, the dilated introitus in the background and the husband kissing his wife without removing his hat (or mask).

In fancy's eye I saw the horde of camera operators, limelight men, and studio hangers-on with bulging eyes all focused on this sight. But wait, the curtains are not pulled, and thousands and thousands of men and women, boys and girls, are crowding round the window and peering into the room, thanks to the courtesy of the British Broadcasting Corporation.

Oh dear! Oh dear! Where are we going and where will we stop?

Mr. Malcolm Donaldson (*Journal*, December 27, p. 1594) taunts me with the jibe that I am living in a past age. I wish I was.—I am, etc.,

London, W.1. A. DICKSON WRIGHT.

Preparation for Hysterectomy

SIR,—I quote below extracts from letters from three women:

"Six weeks ago I had an operation for the removal of the womb for a large tumour. This was done through the vagina. Yesterday I went back to the hospital for a check-up. They then asked me if I had a husband, and told me that the vagina was now only 1 in. (2.5 cm.). One of the doctors spoke to me about married life and said: 'Your husband can try,' but in a tone that meant it was impossible. I am horrified. How can I tell my husband? Does this mean that all our married life has stopped? I am bewildered and utterly miserable and have a queer feeling that life has come to an end."

"Three years ago I had a vaginal hysterectomy. This is my problem: I am now only 47 and simply cannot resume marital relations with my husband. I love him very dearly as he loves me, and I have really tried, but the pain is such that I cannot hide from my husband the fear of intercourse. I feel I have failed him very badly. Besides, 47 is surely too young to be bereft of all sexual desire?"

"A few years ago I had a hysterectomy. My husband and I were ideally happy and very much in love with each other. However, since my operation he has slept in another room and refuses to have any sexual relations. He will not discuss the matter, and I am now utterly miserable."

In all these cases it would appear that there was no discussion with the patients as to the possible effect of the operation on their marital relations. Surely, in the first case, the time to inquire whether she had a husband who was likely to be concerned if the operation should prove as mutilating as it did was before and not after the operation. As one presumes that marital relations are happily resumed after many hysterectomies, it would appear that this might have occurred in the third case, if some understanding doctor had taken the trouble to have a talk to the husband before the operation and explained matters to him.

I believe that many of these women fall between two stools—the family doctor thinks the surgeon will explain matters to the patient and the surgeon thinks the family doctor has already done so. But on the whole it appears that the tragedy of a shattered marriage is not given sufficient consideration.—I am, etc.,

London, N.W.3. WINIFRED COPPARD.

Carbon-monoxide Poisoning

SIR,—I read with interest the statement by the Medical Research Council on the use of carbogen in the treatment of carbon-monoxide poisoning (*Journal*, December 6, p. 1408). However, I suggest that their conclusions require further consideration. The assurance that first-aid workers would in practice be able to distinguish between asphyxia due to carbon monoxide and asphyxia due to other causes may or may not be true. It is, however, most unlikely that both oxygen and carbogen would be available for selection, as this would necessitate duplicating all resuscitation equipment.

The M.R.C. statement mentions independent tests carried out on subjects who were not poisoned to the stage of respiratory failure. Similar experiments carried out by Apthorp *et al.*[1] showed that during exercise, while breathing pure carbon monoxide, blood levels of between 30% and 50% saturation were obtained without any change in the respiratory rate, minute volume breathed, or oxygen consumption. Under such conditions one would imagine that the alveolar carbon-dioxide tension does not rise. Therefore the administration of carbogen would presumably result in stimulation of the respiratory centre and an increase in the rate and depth of respiration. However, according to Haldane (quoted by Samson Wright[2]), the use of an oxygen/carbon-dioxide mixture containing 5% carbon dioxide would result in a rise in the alveolar carbon-dioxide percentage from 5.6% to 6.2%. This would cause a shift of the oxygen dissociation curve to the right, and, while aiding the evolution of oxygen at the tissues, would interfere with its uptake at the lungs.

According to the Medical Research Council, in experiments on animals the interval between failure of the respiration and circulatory failure is so short as not to admit of any treatment. When respiratory failure occurs the haemoglobin in the blood will undergo further reduction than normal, and there will be a local rise in the carbon-dioxide tension throughout the cells of the body, including those of the respiratory centre which now fail to respond to this stimulus. Therefore the administration of further carbon dioxide is useless. The same arguments apply in the case of circulatory failure. This circulatory failure following carbon-monoxide poisoning has also been remarked in asphyxiation due to electric shock by Urquhart[3] in Canada and Djourno[4] in France, both of whom are of the opinion that the Holger Nielsen method is not so well adapted to maintaining the circulation as those of Schafer or Silvester respectively. I feel, therefore, that no adequate argument has yet been advanced

to warrant a return to the use of carbogen in the treatment of carbon-monoxide poisoning, and I think that the administration of pure oxygen should continue to be the treatment of choice.

It may be that the Medical Research Council have carried out experiments to determine which form of artificial respiration will more readily maintain an adequate circulation in circulatory failure, and, if so, their findings would be of considerable interest.—I am, etc.,

Pennington, Hants. M. B. CARSON.

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Oxygen in Infancy

SIR,—I was interested to read your annotation (*Journal*, December 20, p. 1521) on the dangers of oxygen administration to newborn infants. The way in which oxygen administration became the be-all and end-all of resuscitation till recently is truly astonishing. For nearly 20 years I have been trying to draw the attention of obstetricians and others to the importance of the nervous system and its level of response, as first demonstrated experimentally by Barcroft[1] in his B.M.A. lecture at Aberdeen, and later on in other lectures and publications. I[2] have shown how his findings were confirmed clinically by my various experiences with "cardiazol-ephedrine," but very little notice is still taken of these nervous reactions.

More recently, at the last B.M.A. Annual Meeting at Birmingham, Dr. R. J. K. Brown, of Cardiff, gave a most stimulating and (to me) enlightening lecture on the large amount of chromaffin tissue in the infant (which incidentally secretes only noradrenaline), and he showed the importance of the maintenance of the blood pressure if the complicated switch-over of the circulation at birth is to be performed properly. In fact his conclusion was (I believe I quote him exactly) that "the newborn infant is less tolerant of ischaemia than it is of anoxia." This shows how very fortunate I was in using cardiazol-ephedrine when I found I had no lobeline, for both cardiazol (leptazol) and ephedrine are potent vascular stimulants, so that not only does the preparation act as a convulsant and raise the nervous threshold to stimuli, which Barcroft showed to be so important in initiating respiration, but it also tends to raise the blood pressure as well. It was what Sir Henry Dale calls "a lucky accident."

Yet a third measure, which has at last received general recognition in the treatment of shock but which is still largely neglected in midwifery, is the influence of temperature on increasing the demand for oxygen, so that warming the infant is actually making it use up its oxygen more rapidly than need be the case. Concentration on getting oxygen into the infant seems to have blinded obstetricians to the importance of these nervous, vascular, and metabolic processes—and no doubt there are others to which I am equally blind myself: but I hope that your annotation will do something to deflect attention to these profitable lines of treatment and research.

These matters are probably of much more importance than is often recognized even in later infancy. You say that here the problem may be "how to keep the concentration [of oxygen] sufficiently high in such emergencies as laryngotracheobronchitis, bronchopneumonia, and cardiac failure." Administration of oxygen and antibiotics is not the only answer. Over fifty years ago Holt[3] noted, among other things, that phenacetin was of value in infantile bronchopneumonia, and of all the drugs he mentioned it is the only one I have found of lasting value. I have no idea how it acts, but I should certainly like to see in the *British National Formulary* (if only doctors would use it) a tablet of phenacetin, 1 gr. (65 mg.), and caffeine, ¼ gr. (16 mg.), the dose one tablet every four hours for each year of age to the age of 4. With this tablet, in the large dosage I have mentioned, I treated successfully many cases of bronchopneumonia in infants before the days of sulphonamides, and I still find it of value. Physicians seem all too anxious these days to discard well-tried drugs whose action they cannot understand in favour of the latest fashion, and, although I believe that both phenacetin and caffeine are being expelled from the new *B.P.*, I hope I may live long enough to learn the reason they act so well with infants, just as, after so many years, I have learned why cardiazol-ephedrine is so dramatically successful in resuscitation. And dramatic is the only word which will express the way in which, within 60 seconds, it will transform an apparently lifeless foetus into a lustily yelling infant. This is really satisfactory medicine, though fortunately opportunities of practising it are getting fewer with better antenatal care.—I am, etc.,

Winsford, Cheshire. W. N. LEAK.

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Hazards of Meprobamate

SIR,—It would be a pity if your annotation entitled "Hazards of Meprobamate" (*Journal*, December 27, p. 1586) were to mislead the medical profession, which seems quite possible, as it stresses a few rare complications produced with dosages outside the normal therapeutic range and ignores the wide safety margin of the drug.

In dealing with habituation, reference is made to the work of Haizlip and Ewing,[1] but these authors gave 8 or 16 full-strength tablets daily for 40 days before abruptly withdrawing therapy, while the average recommended dosage is three or four tablets daily with gradual withdrawal on termination of treatment. Haizlip and Ewing[1] themselves found only one severe withdrawal reaction out of 23 patients taking eight tablets daily, and they point out that the drug appears to be much safer than barbiturates from many points of view. They also recommend a maximum daily dosage of six tablets (2.4 g.) daily and say that for the average patient in general practice complications of habituation or withdrawal symptoms are unlikely. Stough[2] investigated a series of unstable prison inmates and found that when high dosages of meprobamate were abruptly withdrawn there were some untoward symptoms, but that these did not occur if three or six tablets were taken daily and gradually reduced. In a similar way Boyd *et al.*[3] assessed the drug, using normal therapeutic dosages, and found no evidence of habituation.

Habituation is possible in particularly susceptible patients with a very wide range of drugs, and meprobamate is no exception, particularly in some alcoholics.[4] Habituation is therefore a possibility, but any form of withdrawal extremely unlikely at the recommended dosage, and, as pointed out by Lemere,[5] the benefits of meprobamate, so far, well outweigh the problems produced by the relatively infrequent abuse of the drug.

Apart from habituation, other side-effects have been reported, such as idiosyncratic reactions occurring in about

one in every 200 patients and effects due to gross overdosage; although these have been relatively benign considering that there have been many unsuccessful suicide attempts, in which amounts ranging from 20–100 tablets have been taken.[6–9] The two deaths recently reported from overdosage[10] must represent a negligible percentage of suicide attempts made, when compared with the 487 successful suicides with barbiturates in the year 1956.[11]

Aplastic anaemia was also referred to as a complication of meprobamate therapy,[12] but this blood dyscrasia was diagnosed some weeks after the end of eight days' treatment with meprobamate, making it difficult to establish any cause-and-effect relationship. It becomes even more unlikely when the lack of any other cases of bone-marrow depression in many years of extensive use is considered. Finally Dr. W. Sargant[13] is quoted as having said that meprobamate has a limited place in the treatment of neuroses, but he makes it quite clear that there are definite indications for the drug,[13 14] which therefore has a definite place in the treatment of neuroses and certain other states such as undue muscle tension.—I am, etc.,

London, N.W.1. B. W. CROMIE,
Medical Adviser,
John Wyeth & Brother Ltd.

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Three Pillars of Clinical Research

SIR,—Mr. H. J. B. Atkins's paper "The Three Pillars of Clinical Research" (*Journal*, December 27, p. 1547) made most interesting reading, and should be an excellent guide to anyone setting himself a task in such work. I felt a little aggrieved, however, to find that he singled out the surgeons as inexpert mathematicians, until it became clear that he was himself not above reproach in this respect. In the marking of examinations, he scorns the time-honoured expedient of giving a higher maximum mark to the clinical than to the written examination in order to achieve relative "weighting" of the former, and claims that what is needed is an increase in range of marking in the clinical part. Surely a high maximum should automatically increase the range of marking. To take an exaggerated example, if the papers were marked out of 10, and the clinical out of 490 marks, it would scarcely be worth the effort of writing the paper.

Perhaps a more convincing argument would be to take a concrete example: if A gets 80% and B 70% in the paper, and in the clinical A has 70% to B's 80%, each has a total of 150 marks. Now suppose that the illogical examiners at Guy's were to apply their anomalous system—in the paper the marks are out of a possible 200—A has 160 and B 140. In the clinical (out of 300) A has 210 and B 240. Their totals are now A 370 and B 380, and, because of his greater clinical ability, B wins the prize. In Mr. Atkins's example A's superiority in the paper (5 marks in 200) was greater than B's in the clinical (5 out of 300), so that their totals were equal.

Perhaps, after all, this merely serves to emphasize the desirability of having one's figures checked by an expert, as is suggested later in this excellent paper.—I am, etc.,

Yelverton, South Devon. IAN W. PAYNE.

Trypanosoma Rhodesiense in Bushbuck

SIR,—By their isolation of *Trypanosoma rhodesiense* from a bushbuck, Dr. R. B. Heisch, Mr. J. P. MacMahon, and Dr. P. E. C. Manson-Bahr (*Journal*, November 15, p. 1203) have made a valuable contribution to the study of the epidemiology of sleeping sickness. In addition, they isolated two strains of *T. brucei* from the 24 animals examined. In a similar investigation in different areas where *Glossina swynnertoni* and *G. morsitans* were the tsetse fly vectors, I succeeded in isolating only one strain of polymorphic trypanosomes, which by its failure to infect volunteers was presumed to be *T. brucei*, from a total of 74 animals of various species.[1] Dr. Heisch, Mr. MacMahon, and Dr. Manson-Bahr suggested that this lower incidence of infection may have been due to a partial failure of diagnosis because I may have inoculated too little blood from the animals into too few rats. I believe, however, that the results may well reflect a true difference in the incidence of trypanosomiasis.

A study of previous surveys of trypanosomiasis in African animals shows that the infection rate varies greatly amongst species: waterbuck, bushbuck, and reedbuck, for example, have been consistently found to be more frequently infected than zebra, wart-hog, and impala. Bushbuck comprised a large proportion of the animals which were examined by Dr. Heisch and his colleagues, whereas many of the animals I examined belonged to species which have been found to have low infection rates. It is also possible that a high density of the tsetse fly, *G. pallidipes*, in the area investigated by Dr. Heisch *et al.* results in a greater trypanosome challenge, and a greater infection rate in animals, than occurs in some *G. swynnertoni* and *G. morsitans* areas.

Dr. H. L. Duke in his letter (*Journal*, December 6, p. 1410) questions if it is yet possible to decide if *T. brucei* and *T. rhodesiense* are distinct or whether one can change into the other. The crux of this problem lies in the stability, or lack of it, of the infectivity to man, which is the only known property distinguishing the two trypanosomes.

There is strong epidemiological and experimental evidence that this property is stable. Bruce, Hamerton, Watson, and Bruce[2] examined several strains of polymorphic trypanosomes obtained from wild animals and from patients in Nyasaland. They found such striking morphological and physiological similarities in all the strains that they concluded that the evidence was in favour of *T. rhodesiense* and *T. brucei* being one and the same parasite. They were aware, however, that it was possible that the trypanosomes might differ in their infectivity to man, and they stated, "If *T. rhodesiense* and *T. brucei* are identical we must expect to find cases of Nyasaland sleeping sickness cropping up in all parts of Africa where *G. morsitans* and *T. brucei* exist." It can now be said that this expectation was incorrect; there are many areas where *T. brucei* is common in animals and *T. rhodesiense* has never been found in man. It has been shown experimentally at Tinde Laboratory, Tanganyika, by Drs. J. F. Corson, H. Fairbairn, E. Burtt, and K. C. Willett, and by myself, that strains of *T. rhodesiense* can be transmitted for long periods through various species of animals without losing their infectivity to man. Dr. H. L. Duke in his letter cites

similar experiments which appear, in contrast, to show a lability of the infectivity to man. Fairbairn and Burtt,[3] however, in a brilliant study which is too detailed to describe here, showed convincingly that some tsetse flies carrying *T. rhodesiense* in their salivary glands may fail to infect man because they inoculate too few trypanosomes and that such a factor could well explain the apparent loss of infectivity found by Dr. H. L. Duke.

The evidence suggests that the polymorphic trypanosomes are morphologically identical and differ in physiological properties only; one of these, the infectivity to man, is, as has been pointed out above, stable and separates *T. rhodesiense* and *T. gambiense* from *T. brucei*, but others, such as virulence, are variable and influenced by the mammalian host of the trypanosome. *T. gambiense* is a polymorphic trypanosome which is partially adapted to man because its vectors, *G. palpalis* and *G. tachinoides*, are riverine tsetse flies, which, in areas where this type of sleeping sickness occurs, appear to feed on man to a large extent. *T. rhodesiense*, on the other hand, is a polymorphic trypanosome infective to man but which appears to be better adapted to certain species of wild animals because its vectors, the game tsetse flies, *G. morsitans*, *G. swynnertoni*, and *G. pallidipes*, are zoophilic. It is impossible to do justice to the complicated but fascinating problem of the epidemiology of sleeping sickness in a short space.—I am, etc.,

London, N.W.1. M. T. ASHCROFT.

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2 Bruce, D., Hamerton, A. E., Watson, D. P., and Bruce, *Rep Sleep. Sick. Comm., Roy. Soc.*, 1914, **16**, 34.
3 Fairbairn, H., and Burtt, E., *Ann. trop. Med. Parasit.*, 1946, **40**, 270.

Local Chemotherapy in Joint Tuberculosis

SIR,—In contrast to the striking improvement in the prognosis of pulmonary tuberculosis brought about by the advent of modern chemotherapy, the results of the use of these drugs in tuberculosis of the skeletal system, especially in certain types of closed joint disease, are less favourable. The chief difficulty lies in cases of predominantly capsular involvement where conservative treatment rarely leads to healing and yet resort to surgery seems too drastic and when undertaken often leads to poor functional end-results.[1] In this type of case where synovectomy has formerly been strongly advocated[2] we have recently investigated the effects of general and local chemotherapy combined with local corticosteroid therapy. So far as we are aware there is no reference in the published literature to the use of this method, which has previously been regarded as contra-indicated.

Over the past two years we have treated 15 cases (11 knees, 2 shoulders, 1 elbow, and 1 proximal interphalangeal joint) with twice-weekly intra-articular injections reduced after a few weeks to once weekly. We injected 10 mg. of a long-acting preparation, prednisolone trimethylacetate ("ultracortenol"), developed especially for local administration, plus 0.5 to 1 g. of streptomycin. The injections were made under local anaesthesia with full aseptic precautions, using a narrow-gauge needle. In addition each patient received the standard sanatorium regime of bed rest, immobilization of the affected parts by splinting, sunlight, and physiotherapy appropriate to his needs. General chemotherapy was maintained in all cases mostly using 1 g. streptomycin twice weekly plus 300 to 400 mg. isoniazid daily or 10 to 12 g. of *p*-aminosalicylic acid on four days of each week plus 300 to 400 mg. isoniazid daily. The diagnosis was established in all cases by the demonstration of tubercle bacilli in the aspirate from the joint in question or by histological methods.

As soon as possible after the subsidence of the acute signs passive joint movements were instituted followed soon by active exercises. We never encountered any evidence that this programme of early mobilization hindered progress toward healing. In over 400 injections no complications were encountered and no local or general reactions observed.

Compared with our previous experience with other forms of treatment, we believe that the present method offers the following significant advantages: (1) More rapid regression of acute inflammatory signs. (2) Improved local toleration of intra-articular streptomycin. (3) Reduction of the necessity for major surgical intervention. (4) Diminution of capsular fibrosis and scar formation. (5) Increased possibilities for earlier and more intensive mobilization. (6) Better functional end-results. (7) Marked reduction in the duration of sanatorium treatment.

Whether this method of therapy will lead more rapidly to definitive healing of the disease, with a reduction of the relapse rate, can only be decided after longer observation of a larger number of cases. In the meantime our results encourage us to advocate that this method be more widely investigated in other cases.—I am, etc.,

Davos-Clavadel, Switzerland. HERBERT WEHRLIN.

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Too Solid Flesh

SIR,—In your leading article on obesity entitled "Too Solid Flesh" (*Journal*, December 27, p. 1581), you state, "All the diets advised, however described and no matter how much their minor differences are emphasized, are alike in prescribing a low intake of calories and carbohydrates."

Surely the time has come when we can say that this is no longer so. As one who has been advocating an "eat as much as you like" diet for over 20 years I regard the limited calorie diet as a thing of the past—something to be used only in special cases such as diabetics. Dr. H. L. Marriott's weight-reducing diet[1] is an excellent example of an unlimited calorie diet, which includes among other things unlimited amounts of much maligned foods such as potatoes and bananas, and on which losses of 1–2 lb. (0.45–0.9 kg.) a week on the average may be expected. My own "effort"[2] produces weight losses at least twice as rapidly, though admittedly it is more stringent. Yet the patient can eat as much as he likes of all permitted foods. I have just lost 35 lb. (15.9 kg.) in ten weeks on it, and many of my patients have done better.

I have noticed with satisfaction that the notion of what in some quarters is being referred to as a "free diet" (a better name would be "unlimited calorie diet") is finally beginning to gain ground. The limited calorie diet is more difficult to institute and observe, and it is neither necessary nor desirable except in special cases.—I am, etc.,

London, W.9. A. A. LEWIS.

REFERENCES

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Women Police Surgeons

SIR,—The interesting article by Dr. Nesta H. Wells on "Sexual Offences as Seen by a Woman Police Surgeon" (*Journal*, December 6, p. 1404) raises an important point. It often happens that less consideration is given to the treatment of damage done to a victim of a sexual assault than may sometimes be given to the treatment of the offender. In psychiatric practice we come across patients in whom a sexual assault, or being a witness of a sexual assault, is an aetiological factor in a serious psychoneurosis. The subsequent attitude of parents, the medical examination, the police inquiry, and Court appearance may increase the trauma and leave the victim disturbed by feelings of personal guilt.

On a recent visit to Israel I had the good fortune to meet Mr. David Reifen, who is a stipendiary magistrate for the Juvenile Court in Tel Aviv and District. The fact that he was previously a psychiatric social worker was one of the relevant qualifications for his post. Amongst the changes introduced into the Court procedures in Israel as a result of his work has been the appointment of "Youth Examiners" for the purpose of interviewing the victims of assaults, with due regard to the necessity to bring home a conviction when an offence can be proved, and yet, at the same time, protecting the victim from the further damage of re-living the occurrence by giving evidence in Court. This needed an amendment to the Law of Evidence—viz., the Law of Evidence Revision (Protection of Children), 5715–1955. This procedure has been fully outlined by Mr. Reifen.[1]

Miss Nesta Wells makes a plea for the appointment of women police surgeons. She states such appointments are still rare and suggests the provision of definite appointments on a part-time basis for women doctors in areas where whole-time appointments could not be justified. I would like to add in regard to such appointments that not only the sex of the doctor but also special training in the understanding of the deeper processes of human behaviour should be a necessary qualification. If this were so, the examination could be part of a therapeutic process, and, where necessary, certain more prolonged treatment of a disturbed child could be initiated. In the case of offenders, the Law rightly provides for treatment—even if in practice such treatment may not always be available. In the case of the victim there has been no procedure for repairing the harm that has been done; in fact, such harm is more often increased.—I am, etc.,

Leeds, 1. J. H. KAHN.

REFERENCE

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SIR,—I feel I must reply to Dr. N. W. Sargent's letter (*Journal*, December 20, p. 1538) criticizing my attitude on this subject, as he puts forward a suggestion which means that he and others who think like him have not fully appreciated the special circumstances usually present in these cases. I am in no way inferring that men do not possess or use the innate qualities that he mentions, and in fact most medical work can be equally well done irrespective of sex, but there are some jobs which are better done by men and others that are better done by women. Cases of sexual assault on girls (which form the bulk of those seen) definitely come into the latter category, simply because of their sex. In most cases the psychological damage done is far greater than the physical, and therefore everything should be done to reduce the trauma, not increase it, as examination by another man might very well do.

In practice, the police have found that parents are more willing, and in fact often ask for an examination, when they know it will be done by a woman. I think that if Dr. Sargent had a young daughter who had been assaulted by a man he would find that she would prefer to be examined in those regions by a woman—and her mother too would feel happier about it, in order to avoid the risk of adding insult to injury by being touched by another man. A little imagination and understanding are needed to see things from the girl's point of view, which should be followed by propaganda and push to get the authorities to see the necessity and take the required steps. The cost need be little more than at present. I hope the report I made (*Journal*, December 6, p. 1404) will help some of them to move.

I agree with Dr. Sargent that prevention is better than cure and that far more could and should be done in the home by parents to give their children good moral teaching and training in self-control over all their emotions, and consideration for other people's feelings. Having all your own way always leads to trouble sooner or later. But a little more of the Christian spirit about would make the world a better place.—I am, etc.,

Manchester. NESTA H. WELLS.

Buzzers for Bed-wetters

SIR,—A lot of water has passed under the bridge, and also, no doubt, into the beds of untreated enuretics, since your annotation (*Journal*, August 23, p. 499) drew attention to my paper on the treatment of persistent enuresis with the electric buzzer. Some diehards, either for personal reasons or because they cannot bear to admit that an apparatus succeeds where medical "art" (whether in the form of reassurance, play therapy, the administration of inert or specific drugs) fails, still oppose this form of therapy, but their numbers are dwindling and the popularity of the buzzer is gaining momentum. It is clear that, for the persistent enuretic over the age of 7, the problem no longer is, "What treatment, if any?" but rather, "Which apparatus and how can we obtain it." A set should be reliable, safe, effective, trouble free, and not too expensive. There are several available, but there is considerable variation in cost, since the most expensive is about five times as much as the cheapest without being any better.

I have treated over 200 cases almost exclusively with the "Eastleigh" set, which I have found measures up to all requirements. In particular there has been no case of buttock rash, as occurred in 23% of the series reported by Drs. T. H. Gillison and J. L. Skinner (*Journal*, November 22, p. 1268), the reason no doubt being that they used a single pad with spirally arranged metal electrodes, whereas we use two wire gauze mats separated by a sheet. In the former electrolysis occurs next to the skin, whereas in the latter it takes place in the separating sheet, with which the patient is not in contact.—I am, etc.,

Stock, Essex. IAN G. WICKES.

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Obituary

J. D. WARDALE, M.B., B.S.

Professor J. D. Wardale, emeritus professor of ophthalmology in the University of Durham, died at his home at Haydon Bridge, Northumberland, on December 7, 1958. He was 90 years of age.

We are indebted to Sir WILLIAM HUME for the following appreciation: John Dobson Wardale was born at Newcastle upon Tyne on April 16, 1868, and was educated at Aston Grammar School, Market Rasen, Lincolnshire. At the age of 18 he entered the Durham University College of Medicine, and graduated M.B., B.S. in 1891. Throughout the five years he was at the College he played Association football for the university and for Newcastle West End. He ceased his connexion with the latter club when it joined with Newcastle East End to become Newcastle United. After graduation he served for six months as house-surgeon to Mr. Frederick Page, and then for twelve months with Mr. G. E. Williamson at Newcastle Royal Infirmary, and then as resident house-surgeon at Bridgwater Infirmary. Bridgwater had a good fifteen, and Wardale then began to play rugby football for that club as a wing three-quarter.

Returning to Newcastle about 1894, he started in general practice. While still a general practitioner he became registrar at the Infirmary to Mr. G. E. Williamson, and later worked with him in the ophthalmic out-patient department as an unrecognized assistant. Mr. Williamson was a general surgeon with a special interest in ophthalmic work, and founded the elements of an eye department at the old Infirmary. His tragic death from pneumonia in 1900 at the early age of 48 left the house committee in a quandary, as it had been laid down that in future there were to be no dual appointments and it was apparent that there ought to be a surgeon appointed to a growing out-patient eye department. George Walter Ridley was appointed to the post of general surgeon, and Wardale became the first ophthalmic surgeon.

In those days Wardale's department consisted chiefly of an out-patient department, and he could obtain beds for operative work only by the courtesy of his surgical colleagues. This was all changed when he went to the Royal Victoria Infirmary on the Leazes, where Wardale had a well-equipped out-patient department and beds in Ward 3. In 1928 he retired from the Infirmary, where he had served, on the Forth Banks and the Leazes, for 28 years. From the time of his appointment as surgeon in charge of the eye department at the Infirmary Wardale lectured in ophthalmology in the College of Medicine, first with the designation of lecturer and later as professor. He gave up teaching in the college in 1933 under the age limit.

One of Wardale's outstanding characteristics throughout his service in the Infirmary and the College of Medicine was his punctuality and conscientiousness in carrying out his duties. He was never late and never missed an out-patient session unless illness or an appearance in the county court made it impossible for him to attend. Mr. J. S. Arkle has this to say of Wardale's work in the hospital:

> "Mr. Wardale was a sound practical clinician whose opinion was sought and valued by his colleagues. He was one of the earliest to recognize that changes in the fundus in hypertensive retinopathy were reversible. He always kept careful notes, which he had bound in volumes, forming a permanent record of his patients. His advice and opinion were in great demand in ophthalmological cases arising out of industrial employment."

All his colleagues, medical and surgical, relied implicitly on his opinion in his specialty. As a physician I found Wardale most helpful in all questions of retinal abnormalities, particularly those associated with hypertension and renal disease. He early pointed out to me that retinopathy in cases of hypertension could completely disappear, and he made this observation at a time when the general teaching was that such patients were sure to die within two years of the appearance of such ophthalmological changes. He was always interested in anything out of the way, and he transferred to me my first case of amaurotic family idiocy in April, 1910 (*Review of Neurology and Psychiatry*, July, 1914).

During his long connexion with the Infirmary and up to the time of his complete retirement four or five years ago Wardale must have given ophthalmic advice to nearly all his colleagues and their families. In his private practice every case was entered in a book, and when he left Jesmond Road there were dozens of books: up to the time of his giving up practice he was always able to refer to a patient's previous condition, however remote the time of the first consultation.

No man in the country could have seen more cases of miners' nystagmus than Wardale, and it was not uncommon for him to have three or four cases in one day in the Durham county court. As an expert witness Wardale was admirable, and the local county court judges seldom questioned his opinion, which he gave with conciseness and absolute impartiality.

Although he kept himself aloof from medical politics Wardale was a constant attender at staff meetings and meetings of the council at the college. He spoke little, though his judgment was very sound. He served as president of the Section of Ophthalmology when the British Medical Association held its Annual Meeting at Newcastle upon Tyne in 1921. During the second world war he returned to the Infirmary to assist Mr. Arkle in the eye department, and was most insistent that he was there only as Mr. Arkle's assistant. Throughout his life he was a keen shot, as his father had been before him. He gave up shooting only after he had had a bad attack of subacute arthritis which permanently affected his trigger finger.

Wardale was a shy man, but he had a host of friends, and had a very proper appreciation of what was good in food and wine. He maintained his youthful figure to the end, and was never known to wear an overcoat, though in later years he carried a raincoat on his arm: nor did he ever drive a motor-car.

In 1904 he married Miss Robinson, a niece of the first Lord Joicey, and he was proud of the fact that he was a great-nephew of John Dobson, the architect. He is survived by a son and two daughters.

R. T. MARTIN, M.R.C.S., L.R.C.P.

Dr. R. T. Martin, who was a native of Sheffield and practised there for many years, died suddenly in a nursing-home near Norwich on December 18, 1958. He was 73 years of age.

Robert Telford Martin was born at Sheffield on July 15, 1885, the son of Dr. John W. Martin. After leaving Elstow School, Bedford, he became a medical student at the London Hospital, qualifying M.R.C.S., L.R.C.P. in 1910. Before he entered general practice in Sheffield he was casualty officer and ophthalmic house-surgeon at the Royal Infirmary, later becoming anaesthetist. After leaving Sheffield in 1925, he practised in Wales, Norfolk, and Devonshire, retiring in 1942. His only son was drowned in action while serving as an acting lieutenant in the Royal Navy during the second world war. He leaves a widow and a daughter.

E. F. writes: The death of Dr. Robert Telford Martin has closed what might be called a dynasty of medical men. He was the third generation, and he and his three brothers were all students at the London Hospital. They each did a period as a house-surgeon at the Royal Infirmary, Sheffield, before taking up general practice. Robert was the only one who remained in Sheffield. His father was on the honorary staff of the Jessop Hospital for Women in Sheffield from 1888 to 1909, and he himself was an honorary anaesthetist to the Sheffield Royal Infirmary from 1920 to 1925. His uncle and cousins, who were also medical men, became members of the regular Army Medical Services.

Robert Martin volunteered for service in the first world war and in 1917 was posted to German East Africa, but was invalided home with malaria, chronic bronchitis, and asthma, and remained in poor health during the rest of his life. The climate of Sheffield during the winter months affected his health to such an extent that in 1925 he was compelled to leave, and he settled in a practice in Carmarthen, where he remained for five years. The humidity of that district became too much for him and he then practised at Snettisham, in Norfolk, for five years, during which period he was an honorary anaesthetist to the West Norfolk and King's Lynn General Hospital, but finally he had again to move south. He spent most of a year in London as a patient in hospitals and nursing-homes, but then returned to practise for a further period of five years in Exmouth. His efforts to keep at work were all in vain, and in 1942 he virtually retired from practice and went back to Norfolk, where he lived at Dersingham, near King's Lynn. By taking long sea voyages as a ship surgeon during the winter months he managed to do a certain amount of work as a locumtenent in districts where the climate suited him. He became quite an experienced globe-trotter, visiting Africa, Malaya, Japan, Australia, and other places. His personality was such that he made friends wherever he went, as his mail testified. He was able to do a certain amount of public work of a light nature, and his services were eagerly sought for by local organizations, to which he lectured on his travels and experiences. He was a most stimulating companion, with a sense of humour which was specially appealing in one who had had years of bad health. In his young days he was a very good amateur actor and had a wide knowledge of drama. A short time ago he decided to relate his travels and experiences in a book, but was unable to finish it. Many of us who knew him have lost a dear friend and one whose attitude to ill-health was an example to all, and to his widow and daughter we extend our sincere sympathy.

E. J. MASTERS, M.B., B.S., D.C.H. D.Obst.R.C.O.G.

Dr. E. J. Masters, who was in general practice at Worthing, Sussex, died in St. Bartholomew's Hospital on November 7, 1958. He was 30 years of age.

Edgar James Masters was born on July 13, 1928, and was educated at Bickley Hall and Sevenoaks School. Receiving his medical training at Guy's Hospital, he graduated M.B., B.S. in 1951, and then held the appointments of assistant house-surgeon and children's house-physician at his own hospital. From 1952 to 1954 he was medical officer to the Royal Air Force National Service O.C.T.U. at Spitalgate, Grantham. He obtained the D.C.H. of the English royal colleges in 1953, and the D.Obst.R.C.O.G. two years later. After completing his national service, he held the appointments of house-physician and obstetric house officer at Lewisham Hospital. In 1955 he began in general practice as a trainee-assistant in Bromley, Kent, and in the following year accepted a partnership in Worthing, Sussex. He leaves a widow and two young sons.

A friend writes: Edgar Masters made a deep impression on a new community in a very short time. It was the kind of impression which can only be made by professional and personal qualities of a high order. He made himself available in the full sense of the word; his whole person, skill, judgment, and sympathy poured out in the service of every new situation, however trivial or however exacting it might be. He showed us the practice of medicine as a vocation, and, though we have lost a friend and counsellor whom we could ill spare, we have gained from him a permanent portrait of a good physician.

A colleague writes: Edgar Masters recognized from the onset of his career that his *métier* lay in general practice, and it was towards this end that he set out to train and equip himself; he was strongly determined to be a good general practitioner. At Worthing he settled down to practise good medicine with considerable success. His house and surgery had just been built, and his practice was rapidly enlarging when his final illness overtook him. In the short time that was available to him he achieved much, and at the same time became greatly liked and respected for the fine example he showed. He was honest and most particular in all he did, and his facility for coming to grips with any problem and providing simple reliable advice was well known. It was indeed tragic that all was cut short so soon. To his widow and two young sons we extend our deep sympathy.

P. H. BOYDEN, M.D.

Surgeon Captain P. H. Boyden died at Southsea on December 5, 1958, at the age of 89.

Percy Hamilton Boyden was born on May 1, 1869, and studied medicine at Edinburgh University, where he graduated M.B., C.M. in 1890. He proceeded to the M.D. in 1899. Entering the Royal Navy as a surgeon in 1893, he was present, while serving in H.M.S. *Thrush*, at the bombardment and capture of the Sultan of Zanzibar's palace on August 27, 1896. Promoted to staff surgeon in 1901, he became surgeon commander six years later. During the first world war he served in H.M.S. *Collingwood* and H.M.S. *Excellent*, at Haslar Hospital, and with the Royal Naval Air Service. He was Admiralty representative on the Inter-Allied Sanitary Conference (1916–20) and on the Maimed in War Conference, and a member of the Food (War) Commission of the Royal Society from 1917 to 1919. After the war he was appointed a commander of the military Order of Avis by the President of the Portuguese Republic. In 1922 he retired under the age limit with the rank of surgeon captain.

FRANCIS McLAGAN, M.B., M.R.C.P., D.P.M. D.T.M.&H.

Dr. Francis McLagan, formerly director of medical services, Sierra Leone, died at St. Mary's Hospital on December 25, 1958. A few days before he had fallen suddenly ill in Sark, in the Channel Islands, where he was the only medical practitioner. He was 57 years of age.

Francis McLagan was born at Perth, Scotland, on January 6, 1901, and was educated at St. Andrews University, graduating M.B., Ch.B. in 1923. After obtaining the D.P.M. of the English Royal Colleges in 1924 he held appointments at Hanwell Mental Hospital and the London County Mental Hospital, Banstead. In 1929 he took the D.T.M.&H. and in 1937 the M.R.C.P. Entering the Colonial Medical Service in 1929, he was posted to the Gold Coast as a psychiatrist. In 1945 he was transferred to Sierra Leone, and on his retirement from the Colonial Medical Service in 1951 he became a general practitioner in Sark.

Dr. T. P. EDDY writes: The news of the untimely death of my former chief and close friend, Frank McLagan, has been received with the greatest regret by those who knew him in Sierra Leone. Frank McLagan came to Sierra Leone in 1945, after 16 years' service in the Gold Coast, and served as assistant director and director of medical services until he retired from the Colonial Medical Service in 1951. Behind a deceptively bluff and forthright manner was a lively intelligence. He had a wide knowledge of medicine, and was a first-rate physician. His work in Sierra Leone was never fully appreciated. He was impatient of the delays and obstructions of Civil Service procedure, and his contempt for any sort of pretentious humbug was devastating and outspoken. He was there during the difficult years just after the second world war, when plans had to be made for long-overdue expansion and development of medical services, while at the time crippling shortages of medical and administrative staff forced a curtailment of such services as existed. Only now,

eight years after he left, are the plans for which he was largely responsible beginning to bear fruit in a larger and more comprehensive medical service, and the credit tends to go elsewhere.

When he had retired from the Colonial Medical Service Frank McLagan went to Sark in the Channel Islands, where he became a model of the traditional country medical practitioner, working alone in a place where he knew everybody and everybody knew him. He enjoyed the freedom from any of the modern forms of national health service. Some of his former colleagues have asked why a man with his experience and ability had chosen to work in so small and secluded a place, and what did he find to do down there. I told him this once. He said, "I wouldn't change my job for theirs for anything in the world. They don't understand. I know everybody here, I work here because I like it, and I am happy."

F. H. WOOLLEY, M.R.C.S., L.R.C.P., L.D.S.

Dr. F. H. Woolley, medical superintendent of Standish House Sanatorium, Stonehouse, Gloucestershire, whose death occurred there on December 29, 1958, was one of the most widely known and respected members of the medical profession in the county.

Born in Gloucester just over 60 years ago, Frederick Henry Woolley spent the greater part of his life in his native county. His younger brother, Dr. Walter Woolley, practises in Bristol. After serving in the R.A.M.C. in the first world war, first on an ambulance train in France and later at the Queen Alexandra Hospital, Dunkirk, Frederick Woolley began his medical studies at Bristol. He qualified first in dentistry in 1922 and proceeded to the M.R.C.S., L.R.C.P. in 1927. After qualification he was house-physician at the Bristol Royal Infirmary and then became assistant medical officer at the Ministry of Pensions Hospital at Bath. His association with Standish House Sanatorium began in 1928, when he was appointed junior resident physician. He came under the influence of the late Dr. Arnott Dickson, the county tuberculosis officer at the time, from whom he acquired a thorough knowledge of the subject which was to become his life-work for 30 years. In 1945 he was appointed acting medical superintendent and county tuberculosis officer until the "Appointed day" in 1948, when the two appointments were separated and he was then appointed senior resident physician at Standish House, a post he occupied until his death. The full and representative attendance at his memorial service at Stroud Parish Church was indicative of the esteem in which Dr. Woolley was held, and the vicar of Stroud, paying tribute, remarked on the perpetual cheerfulness of his character and the beneficial influence he had on the lives of thousands of tuberculous patients who passed through his hands. He had seen the development of the treatment of tuberculosis pass from the sanatorium status to that of a hospital with all the implications thereof. An active member of the Gloucestershire branch of the British Medical Association, he was its honorary secretary from 1945 to 1950. He was also a member of the Tuberculosis Association. A keen member of the Sherborne masonic lodge at Stroud, he was a past-master of it. Heartfelt sympathy from all his friends and colleagues goes out to his widow and only daughter in their grievous loss.—E. N. D.

R. BERTRAM BLAIR, M.B., F.R.C.S.Ed.

Mr. R. Bertram Blair was taken suddenly ill on December 31 while driving his car, and died a few hours later at Hull Royal Infirmary, the hospital in which he did so much of his life's work and of which he rose to be senior surgeon. He was 71 years of age.

Robert Bertram Blair was born at Markinch in Fife on August 15, 1887, and studied medicine at Edinburgh University, where he graduated M.B., Ch.B. in 1911. Three years later he was elected F.R.C.S.Ed. After graduation he held the appointment of house-surgeon at Edinburgh Royal Infirmary. He served in the R.A.M.C. in the first world war and became a surgical specialist, with the rank of major, to the British Expeditionary Force in France, devoting most of his attention to limb surgery. After the war he was house-surgeon at the Radcliffe Infirmary, Oxford, and he was appointed assistant surgeon at Hull Royal Infirmary in 1919. He became a full surgeon in 1923, and before he retired in 1947 was senior surgeon. During his long period of service in Hull he early developed a special interest in orthopaedics. For thirty years he attended the children at the cripples' school in Hull, work from which he derived immense satisfaction. He was also on the staff of the Victoria Hospital for Sick Children, Hull, and the Bridlington, Driffield, and Hornsea hospitals. He was largely instrumental in having a fracture clinic established at Hull Royal Infirmary, and took a major part in the regional negotiations for the building of the Sutton annexe of the infirmary. In 1945 he became a member of the board of management of the infirmary, and chairman of the standing medical committee. During the second world war he was actively engaged in the Emergency Medical Service in addition to his other work, and had a number of E.M.S. beds under his care at Driffield, Beverley, and Cottingham. Since his retirement he had given valuable service by assisting in the casualty department at the Hull Royal Infirmary and in general practice. He was a past president of the Hull Medical Society and also of the East Yorkshire Branch of the British Medical Association, and for some years was a member of the Hull ("A") group hospital management committee. In 1944–5 he was president of the Hull Literary and Philosophical Society, and was a past-master of the Kingston lodge of freemasons. An exceedingly capable surgeon, Mr. Blair was much sought after by general practitioners over a wide area, but there is no doubt that he will be best remembered for the wonderful work he did for the crippled children of Hull.

Mr. Blair leaves a widow, for whom much sympathy is felt in her very sudden loss, and three sons, one of whom is a doctor, and a daughter.

E. M. D. writes: The sudden passing of Mr. R. B. Blair came as a very great shock to his many friends. He was always one who bore his years lightly and seemed to be full of energy and a desire to continue in active medicine. He was a first-class surgeon and showed his special skill in orthopaedic work. He was particularly interested in treating orthopaedic abnormalities in children, and many children treated by him owe their subsequent activity to his kindliness and skill. He was always willing to advise his junior colleagues and assist them to develop their own knowledge and skill. When he was president of the Hull Literary and Philosophical Society he conducted its affairs with dignity and indicated that his interests were spread over a much greater field than that of his professional sphere. He had been a freemason for many years and had been honoured by the province of the North and East Ridings of Yorkshire. The large number of friends who attended the funeral service at Ferriby indicated the high esteem and respect with which he was held. Our sincere sympathy is extended to his widow and family.

W. C. MACARTNEY, V.R.D., M.B., Ch.B.

Dr. W. Charles Macartney, formerly senior surgeon at the Ear, Nose, and Throat Hospital, Glasgow, died on January 1 at his home in Glasgow, aged 71. In the Royal Naval Volunteer Reserve he attained the rank of surgeon-captain.

William Charles Macartney was born in Glasgow on August 25, 1887, into a family with strong medical traditions on both sides. His father was Duncan Macartney, a well-known surgeon at the Western Infirmary, Glasgow, and many of his close relatives were doctors. Educated in Glasgow, at the High School and University, he graduated

M.B., Ch.B. in 1909. His later years at Gilmorehill overlapped the earlier training years of some undergraduates who later became famous—notably Osborne Mavor (James Bridie) and Walter Elliot.

A colleague writes: After the usual residentships, Macartney studied in Vienna and, later, at the Central London Ear, Nose, and Throat Hospital. On returning to Glasgow, he joined the staff of the Glasgow Ear, Nose, and Throat Hospital, where he worked until 1914, when he went off to join the Navy. After the war he returned to his practice. He followed Albert Gray at the Victoria Infirmary, but later left there to continue his work at the Ear, Nose, and Throat Hospital. He remained on the staff there, becoming in time the senior surgeon, a position which he held until his retirement in 1952. As a lecturer appointed by the university he proved to be a very popular teacher indeed.

Charles Macartney's activities ranged widely outside of medicine. He was a leading member and past-president of the Glasgow Art Club. In addition to a very busy life in hospital and private practice, he received and gave a great deal of pleasure from his musical genius. He was an excellent pianist, with a fine voice. One of my earliest recollections of life at the University was of a concert in the Union, at which Mavor, Elliot, and Macartney each performed. Macartney's contribution was a brilliant oratorio called "Jonah and the Whale," composed by himself, with some sublime effects of onomatopoeia.

After the first world war he devoted himself to the R.N.V.R., in which he served up to the second world war, having meantime been promoted surgeon captain, certainly one of the earliest such appointments for an officer in the R.N.V.R. He served again for some time in the second world war, until retiring from the Service for health reasons. The Clyde Division, R.N.V.R., was strongly represented at the funeral service. The deep sorrow of the wide circle of his friends and patients at his passing was mitigated, to some extent, by the thought that he was at last free from the troubles which had beset him during the past six or seven years.

D. C. HUTCHISON, M.B., D.P.M.

Dr. Douglas Hutchison was killed in a climbing accident in Scotland on January 3. He was 31 years of age. Since 1955 he had been registrar and, later, senior registrar in the department for children and parents at the Tavistock Clinic, London, and was in his final year of training at the Institute of Psycho-analysis.

Douglas Cochrane Hutchison was born on November 22, 1927, and graduated in medicine at Glasgow University in 1950. After holding house appointments he began his psychiatric training in Professor Ferguson Rodger's department in 1953. After taking the D.P.M. of the Irish Royal Colleges in 1954 he came to London in the following year to train in child psychiatry and psycho-analysis. Both in Glasgow and in London he had earned a high reputation as a hard-working and scholarly clinician who promised to go far in his chosen field. His loss will be felt widely.

Dr. JOHN BOWLBY writes: Douglas Hutchison joined my department in 1955 at the comparatively early age of 27 and with a strong commendation from Professor Ferguson Rodger. It was soon evident that this commendation was well based. He proved an excellent registrar who was not afraid to learn from mistakes, while his modest charm earned him much affection. He read hard and thought for himself. Although reticent and slow to advance his own views, when he began to make contributions they bore the stamp of intelligence and careful thought. In his clinical work he never spared himself. It was this attitude of responsibility to his work that inspired confidence and, combined with high ability, led us to believe he would go far. There are too few young men of his stamp coming into child psychiatry and his loss is correspondingly great. Our deep sympathy goes to his wife and to his parents.

Dr. RONALD D. LAING writes: Douglas Hutchison was an experienced climber of some distinction, being a member of the Scottish Mountaineering Club, a former president of the Glasgow University Mountaineering Club, and having to his credit several exceptionally difficult Alpine climbs. On his last climb he was a member of a party of six who set off in perfect weather to walk up the easy snow-covered north-west ridge of Ben More, Perthshire. He slipped without warning as he was crossing a frozen snow slope towards a sheltered corner on a lip of the corrie. He was unable to stop his slide with his ice axe and eventually tumbled 1,500 feet to his death.

After qualifying he had first studied chemistry as an aspect of his lifelong pursuit of the truth, but he abandoned chemistry and turned to psychiatry and psycho-analysis when he realized that the "truth" he sought was that of his own existence and that of others. With truth, he loved freedom, and this made it too difficult for him ever to suppose that the truth could be found ultimately in any particular theory. Thus his thinking had a rare untrammelled lack of bias. With humility he combined exceptional talent; with a certain "canniness" an unimpaired generosity. His customary reserve concealed a native wildness and did not cripple his capacity to rejoice. He was fond of saying he loved "the high hills and the wind"; had he lived he might have climbed the highest mountain.

LEON ORBELI

Professor Leon Orbeli, a Russian physiologist who had won the admiration and friendship of scientists in Britain and was an honorary member of the Physiological Society, died on December 8, aged 77.

Leon Orbeli graduated in medicine from the St. Petersburg Military Medical Academy in 1904. He worked under Pavlov at the Institute of Experimental Medicine, becoming assistant director of the physiological department. Later he succeeded his revered chief as professor of physiology at what had by then become the Leningrad Military Medical Academy. Awarded the gold medal of the Soviet Academy of Sciences in 1947, he fell foul of the politicians in the following year and was relieved of some of his posts. But a few years later it was apparent that he had regained in his own country his well-justified prestige as a scientist.

We are indebted to Professor J. H. BURN for the following appreciation: By the death of Leon Orbeli we have lost a distinguished Russian physiologist who had a close acquaintance with his British colleagues in the period before the first world war. Orbeli worked in Cambridge first with Joseph Barcroft; in 1910 they published the well-known paper on the influence of lactic acid on the dissociation curve of blood. Then he carried out what was for him a much more important research with Langley on the sympathetic and sacral autonomic system of the frog. This was anatomical, but was probably useful as a basis for the work he published from Leningrad in 1920 in which he described what has since been known as the Orbeli phenomenon. When the fibres leading to the gastrocnemius muscle were stimulated at a point before the sympathetic fibres had joined them, repetition of the stimulus caused contractions which became progressively smaller. If the sympathetic fibres were then stimulated in addition, the contractions grew to their original size. The explanation is now believed to be that the noradrenaline released by sympathetic stimulation in the neighbourhood of the neuromuscular junctions facilitates transmission from the nerve of the muscle. From the original observations have sprung many further investigations, and it is certain that Orbeli himself must have added greatly to knowledge. The misfortune is that what has been published is in Russian, and much has possibly not been published at all. Orbeli attended the International Physiological Congress in Oxford in 1947, when I had the

opportunity of discussing with him our own results. He was, however, unable to do more than indicate the kind of investigation he was making and gave no account of his work except in terms so general and vague as to be quite uninformative. Orbeli was a charming and modest man, for whom life as a scientist under the rule of Stalin was difficult.

B. ELINOR WALTERS STALLARD, M.D.

Dr. B. Elinor Walters Stallard, who was in general practice at Hereford for many years, died on December 31, 1958. She was 86 years of age.

Blanche Elinor Walters was born at Redland, Bristol, on November 12, 1872, and was educated at University College, Bristol. She received her clinical training at the London (Royal Free Hospital) School of Medicine for Women, and was always proud of the fact that she studied under Dame Mary Scharlieb. Graduating M.B., B.S. from London University in 1901, she proceeded to the M.D. in 1906. After holding the appointments of junior resident medical officer at the Victoria Resettlement, Liverpool, and junior assistant medical officer at St. Pancras Infirmary, she paid a brief visit to India as assistant medical officer at St. Catherine's Hospital, Cawnpore, there to help combat an epidemic of plague. She was senior house-surgeon at York Dispensary from 1905 to 1908. In the latter year she married the Rev. Oswald W. Stallard and returned to India to take charge of a small hospital at the mission conducted by her husband for the Society for the Propagation of the Gospel. There her practice covered a wide area, and her work was often done while on camping expeditions, during which she dealt with any patients who cared to attend her "surgery." She came back to England in 1915, and in the following year was appointed house-surgeon at the Herefordshire General Hospital, a single-handed resident post which at that time included the work of dealing with war casualties. In 1919 she started general practice in Hereford, and shortly afterwards was appointed honorary anaesthetist to the General Hospital. She held this post until 1922, when she was appointed honorary surgeon to the hospital, and was among the first medical women to hold a post of this nature in a general hospital as opposed to a hospital staffed mainly by women. When she retired from the appointment in 1932 she became honorary consulting surgeon. She continued in general practice until 1947. Her son, Dr. A. F. Stallard, is in practice at Hereford.

Sir ALDINGTON CURPHEY, C.B.E., *M.C.*, M.D.

The obituary of Sir Aldington Curphey was printed in the *Journal* of December 13 (p. 1477).

Dr. W. E. MCCULLOCH writes: By the sudden death of Sir Aldington Curphey on November 28, a few days after he had received the accolade from Her Majesty the Queen, Jamaica has lost its perfect gentle knight. On the day of his departure for England I examined my old friend, and his condition was grave. The report from the specialist to whom he went confirmed my worst fears. But this was typical of Curphey: the Queen was going to honour him and nothing could come between him and his duty to his Sovereign. Doyen of the medical profession in Jamaica, he was universally respected. The short, slim, soldierly, immaculate figure added dignity to any occasion. His unique powers of persuasion were linked to a courtesy that was the great characteristic of the man. A master of detail, steel-hard in principle, charitable in all things, he was the negotiator *par excellence*.

Keen on games, he was in the first association football team in Jamaica and was also an enthusiastic bicycle polo player. To the end of his life Sir Aldington kept up his enthusiasm and did everything to encourage athletics for the young.

After his service in the R.A.M.C. during the first world war the Army remained his great love, and from 1919 he was continuously engaged in looking after the welfare of ex-Service men and the local forces. His devotion for the troops was rewarded by his appointment as Honorary Colonel of the Jamaica Regiment, and the Curphey Home, established last year for aged, indigent ex-Service men, was rightly named in his honour. There was no field of social endeavour in which Sir Aldington did not take an active part. His prestige and his powers of leadership led inevitably to his chairmanship of countless welfare organizations in the service of the island. His presidency of the Legislative Council was distinguished by his dignity and courtesy. He was a skilled physician and surgeon, and his qualities endeared him to his patients in all walks of life. He was the beloved doctor, counsellor, and friend.

Sir Aldington was accorded the rare distinction of a State funeral. It was as he would have had it, a military funeral, and with the sounding of the Last Post we bade farewell to a great gentleman. Our sympathies go out to Lady Curphey.

ERNEST SACHS, M.D., F.A.C.S.

The obituary of Dr. Ernest Sachs was printed in the *Journal* of December 20, 1958 (p. 1538).

Dr. KENNETH H. TALLERMAN writes: I should like to pay a further tribute to the late Dr. Ernest Sachs, of New Haven, Connecticut, whom I knew for over forty years and held in great respect. He was an old friend of my family, but I first came to know him well in St. Louis in 1923, when I went there to work in paediatrics at the Washington University Medical School, where he was practising neuro-surgery. He and his charming wife extended to me the most wonderful hospitality, as indeed they did to all their friends, and I was a constant visitor in their home. His enthusiasm for all medical work, as well as his own particular subject, was most stimulating. He was a very kindly man, and the welfare of his patients was always uppermost in his mind. He was content with nothing but the highest standards, which he always expected from himself as well as from his assistants, and he had a warm and colourful personality and tremendous energy. Among his outstanding qualities were absolute integrity and a burning contempt for anything mean or shoddy, especially anything that savoured of intellectual dishonesty. He loved this country, where he had many friends, and he will be much missed by them all.

Medico-Legal

IMPOTENCE FOLLOWING ACCIDENT

[FROM OUR LEGAL CORRESPONDENT]

In 1954 Mr. Geoffrey Frank Rispin, a mechanical engineer then aged 28, who was employed by the Cementation Co. Ltd. as site engineer on the sinking of a shaft at a new colliery at Abernant, was seriously injured when the collapse of a scaffold threw him down the shaft. Among his injuries was a paralysis of his left sciatic nerve, which caused a traumatic impotence and made his daily functions difficult and uncomfortable. He also suffered a permanent shortening of his left lower limb accompanied by a flail foot, so that he was physically worse off than a man with an artificial limb, and from the onset of osteoarthritis.

He had returned to work with a remarkable degree of success, but by reason of his disability was mainly confined to the office. Though he suffered no present loss of earning capacity there was a grave potential loss of earning capacity for the future. He had been keen on swimming, rugby football, tennis, water-polo, and dancing, but these amenities were no longer open to him. At the time of his accident

he had been engaged to be married, but the engagement had been broken off as a result. He had lost the prospect of his marriage and of parenthood, and knew that by reason of his impotence, which would be permanent, any marriage which he contracted in the future would be imperilled by the very probable if not certain impossibility of consummation.

In an action by Mr. Rispin against his employers tried at Cardiff Assizes Mr. Justice Glyn-Jones on April 1, 1958, awarded £8,500 general damages. The employers appealed against the amount of the award, but their appeal was dismissed by the Court of Appeal on December 11 (*The Times*, December 12).

Valuing Mutilations

In his judgment Lord Justice Hodson said that it was the impotence which had caused the Judge to award so high a figure. Impotence was a loss of function properly compensated for by damages in the same way as the loss of power to taste or smell or hear, and was very serious in this case because of its adverse effect on Mr. Rispin's matrimonial prospects. This had to be taken into account and compensated for by a substantial sum of money, so far as money could compensate, and the appeal should be dismissed.

The difficulty facing any Court in trying to compensate disability by monetary damages is great and obvious. No money award can truly compensate for impotence or mutilation. You cannot cost loss of the ability to play golf as you can to some extent loss of earning capacity. A Judge can only do his subjective best. In a case referred to in the December issue of *Law Notes* Mr. Justice Hilbery observed that, the older he got and the more experience he had, the greater was the diffidence with which he faced the task. He observed that he did not think anyone would want to try to assess what he should be paid for a severe toothache. He suggested that it would be a help if the English rule by which a plaintiff does not claim a particular sum should be abolished, and that the plaintiff should claim the sum which he thought would be adequate compensation, while counsel on the other side could put forward what he considered a reasonable sum.

If some such scheme could be adopted, and if the figures could be relied on as counsel's genuine estimate of the "value" of the injury rather than as a horse-trading gambit, it might well be helpful. But if experience in trying to reach a compromise on accident cases is a good guide, objectivity in the figures put forward would be a lot to expect.

Vital Statistics

Infectious Diseases in England and Wales during 1958

The graphs on the following pages show the course of the main infectious diseases (uncorrected notifications) in England and Wales during 1958.

The number of notifications of diphtheria was the lowest ever recorded in any year. No cases were notified in five weeks of the year and only one case in five other weeks. For the first nine months of the year the incidence of diphtheria was slightly less than two-thirds of that in the preceding year, but the number of cases in the fourth quarter was over twice those recorded in the fourth quarter of 1957. The rise in the fourth quarter was due to outbreaks in schools in London and Barking M.B. (Essex); 25 cases were notified in the 41st week, the highest weekly total for almost three years.

The incidence of scarlet fever was the highest for the past four years. The number of notifications of whooping-cough was the lowest since this disease was made notifiable in 1940 and was only about two-thirds of the recent annual totals. The incidence of measles was rather high for an inter-epidemic year. The number of notifications of acute poliomyelitis was the lowest recorded since this disease assumed epidemic proportions in 1947. The incidence of dysentery was very high, and with the exception of 1953 it was the largest recorded. Acute pneumonia and meningococcal infections were less prevalent than in recent years. A comparison of the returns for the past five years is made in the Table below.

Uncorrected Notifications in England and Wales

	1954	1955	1956	1957	1958
Scarlet fever	43,388	32,922	33,285	29,627	39,715
Whooping-cough	105,628	79,191	92,046	85,397	33,945
Measles	147,076	690,918	158,131	632,681	267,365
Acute poliomyelitis	2,388	7,305	3,853	5,435	2,398
Diphtheria	778	542	302	201	193
Meningococcal infections	1,569	1,423	1,478	1,309	1,093
Dysentery	33,976	41,414	53,006	31,538	42,867
Acute pneumonia	26,750	28,087	25,675	32,693	23,510
Typhoid and paratyphoid fever	751	1,117	652	481	416

Eire in Third Quarter

The birth rate for the third quarter of 1958 was 20.6 per 1,000 population and was 0.8 below the rate for the preceding third quarter. The infant mortality rate was 30 per 1,000 registered births and was the same as the rate for the four preceding third quarters. The death rate was 9.9 per 1,000 population and was 0.2 below the rate for the third quarter of 1957.

The number of deaths from tuberculosis was 108 for respiratory and 14 for other forms; these deaths were 23 and 1, respectively, below the total of the preceding September quarter and were the smallest numbers recorded in any quarter. The deaths from the principal infectious diseases included 21 from gastro-enteritis under 2 years, 13 from influenza, 3 each from whooping-cough, acute poliomyelitis, and acute encephalitis, 2 from diphtheria, and 1 from typhoid fever. The number of deaths attributed to malignant neoplasms was 1,090, or 123 fewer than in the preceding third quarter. These deaths from malignant neoplasms included 509 (46.7%) of the digestive system, 147 (13.5%) of the respiratory system, and 138 (12.7%) of the genito-urinary system. Deaths from accidents numbered 192, of which 41 were due to motor-vehicle accidents.

Scotland in Third Quarter

The birth rate in Scotland during the third quarter of 1958 was 18.1 per 1,000 population, being 0.5 below the rate for the corresponding quarter of 1957. The infant mortality rate was 25 per 1,000 registered births and the neonatal mortality rate was 18; both these rates were 2 below the rate for the preceding third quarter. The infant mortality rate was 1 above the lowest rate recorded in any quarter. The death rate was 9.7 per 1,000 population, being 0.7 below the rate for the third quarter of 1957. It was the lowest rate recorded in any recent quarter.

There were only 13 deaths from the principal epidemic diseases—6 from influenza, 4 from meningococcal infections, and 1 each from measles, whooping-cough, and typhoid fever. Five deaths were attributed to acute poliomyelitis. The numbers of deaths from tuberculosis were 113 from respiratory and 11 from other forms; the former was 2 more and the latter the same as in the preceding third quarter. Deaths from malignant diseases were 2,615 and were 91 fewer than in the September quarter of 1957. Deaths from violence numbered 702, of which 200 were due to road transport accidents and 218 to accidents in the home.

Week Ending January 3

Large rises in the notifications of infectious diseases were reported in England and Wales during the week ending January 3. These included 10,168 for measles, from 8,011 to 18,179; 313 for acute pneumonia, from 409 to 722; 298 for whooping-cough, from 286 to 584; 205 for scarlet fever, from 945 to 1,150; 120 for dysentery, from 766 to 886; and 58 for food-poisoning, from 96 to 154.

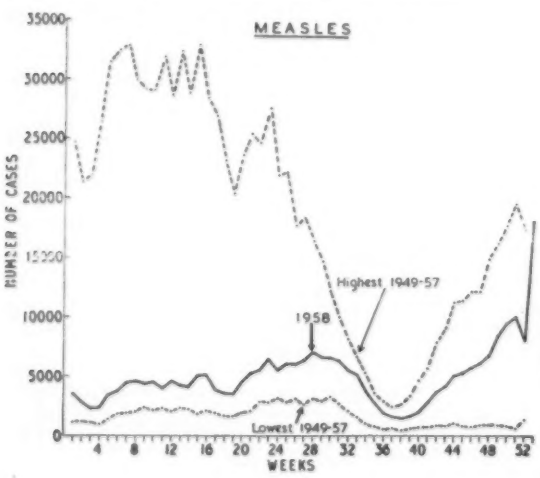
The largest increases in the incidence of measles were 1,095 in Lancashire, from 735 to 1,830; 849 in London, from 617 to 1,466; 845 in Essex, from 505 to 1,350; 821 in Yorkshire West Riding, from 915 to 1,736; 564 in Middlesex, from 512 to 1,076; 479 in Surrey, from 325 to 804; 444 in Kent, from 275 to 719; and 426 in Cheshire, from 363 to 789. A rise in the number of notifications of scarlet fever was reported from most areas; the largest rise was 34 in Lancashire, from 104 to 138, and the only exception to the increasing trend was a fall of 51 in Yorkshire West Riding, from 163 to 112. The largest rise in the number of notifications of whooping-cough was 36 in Warwickshire, from 14 to 50. Four cases of diphtheria were notified, one less than in the preceding week, and two of these cases were notified in Birmingham C.B.

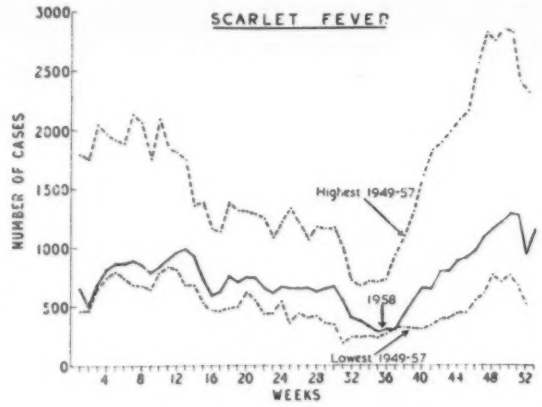
The notifications of acute poliomyelitis numbered 31, and these were 8 more for paralytic and 3 more for non-paralytic cases than in the preceding week. The largest returns were Hampshire 7 (Southampton C.B. 6), London 4 (Islington 2, Wandsworth 2), and Lancashire 4.

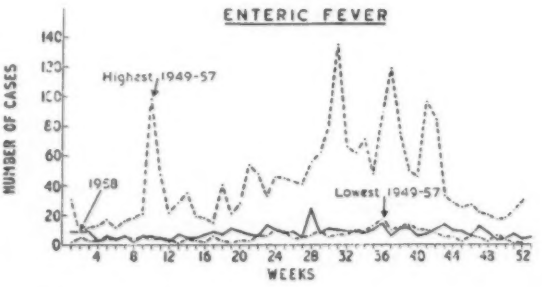
The chief centres of dysentery were Glamorganshire 172 (Cardiff C.B. 81, Rhondda M.B. 61, Llantrisant and Llantwit Fardre R.D. 10), Yorkshire West Riding 119 (Leeds C.B. 50, Barnsley C.B. 19, Wakefield R.D. 10), Warwickshire 72 (Coventry C.B. 56, Birmingham C.B. 14), London 71 (Deptford 18, Battersea 12), Cumberland 52 (Carlisle C.B. 52), Middlesex 52 (Hendon M.B. 37), Lancashire 43, Lincolnshire 35 (Grimsby C.B. 24), Yorkshire East Riding 33 (Kingston upon Hull C.B. 24), Staffordshire 30, Hampshire 24 (Southampton C.B. 10), Berkshire 22 (Maidenhead M.B. 11, Cookham R.D. 11), Durham 21, and Northumberland 21.

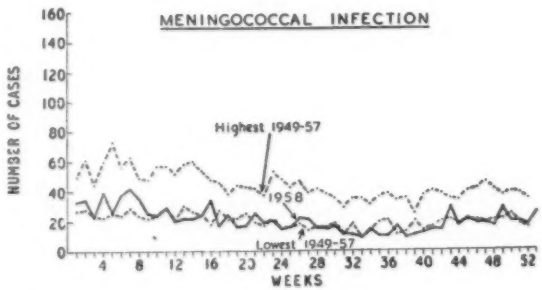
Graphs of Infectious Diseases

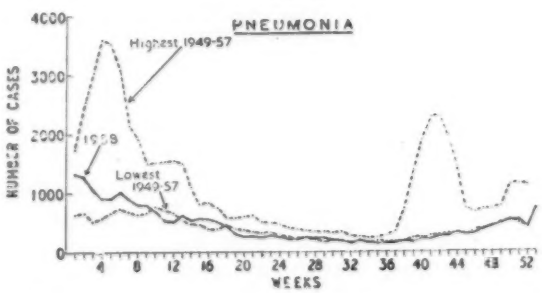
The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the years 1949–57 are shown thus - - - - - -, the figures for 1958 thus ———. Except for the curves showing notifications in 1958, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.

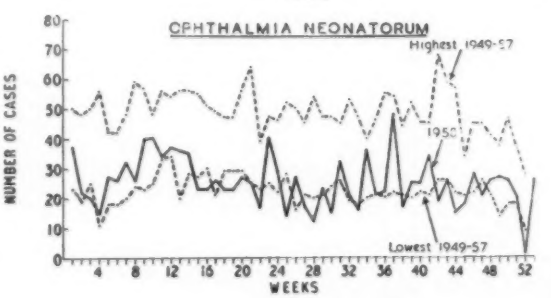


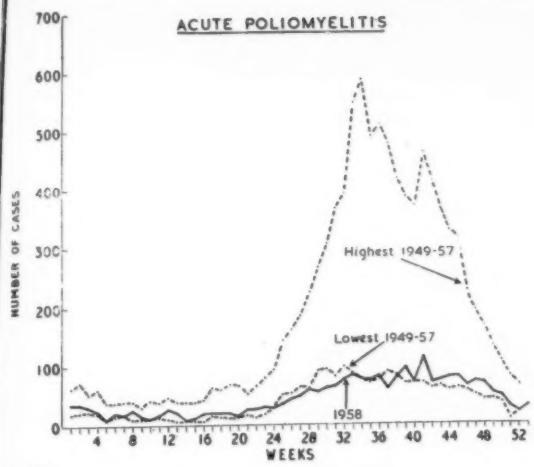


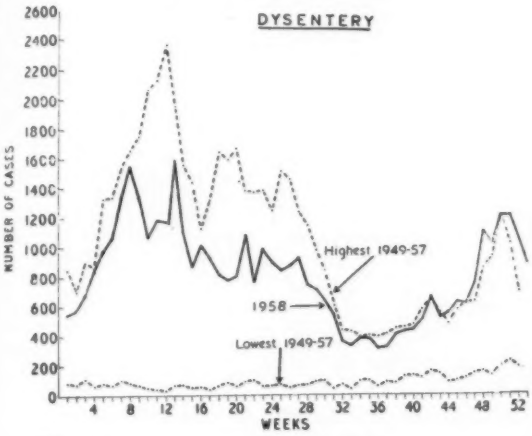


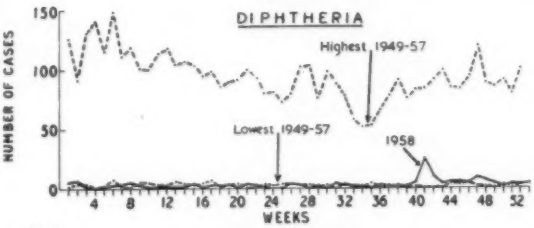


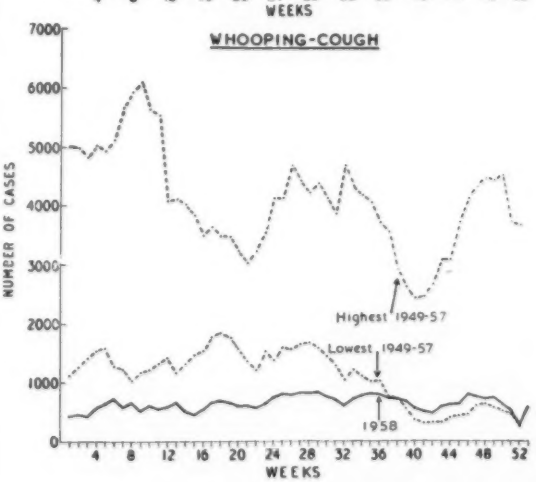












INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **December** 27 (No. 52) and corresponding week 1957.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the whole of England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES	1958 Eng. & Wales	1958 Lond.	1958 Scot.	1958 N. Ire.	1958 Eire	1957 Eng. & Wales	1957 Lond.	1957 Scot.	1957 N. Ire.	1957 Eire
Diphtheria	3	1	1	0	1	5	2	6	0	1
Dysentery	766	69	142	9	5	419	47	107	22	
Encephalitis, acute	3	0		0		2	0		0	
Enteric fever:										
Typhoid	2	2	0	0		4	1	0	0	1
Paratyphoid	2	0	4(B)	0		4	1	1(B)	0	
Food-poisoning	96	11	5	0		95	16	38	1	
Infective enteritis or diarrhoea under 2 years				8	13				5	12
Measles*	3,011	617	124	26	224	2,022	23	57	24	2
Meningococcal infection	17	1	11	0		19	1	11	0	1
Ophthalmia neonatorum	1	0	6	0		16	0	4	0	
Pneumonia†	409	24	301	4	2	755	51	417	6	20
Poliomyelitis, acute:										
Paralytic	15	0	2	0	1	21	1	3	1	
Non-paralytic	5	0				12	0			
Puerperal fever§	100	24	8	0		138	22	7	0	
Scarlet fever	945	56	86	20	17	576	35	62	15	6
Tuberculosis:										
Respiratory	285	21	87	9		301	36	63	7	
Non-respiratory	36	0	5	1		29	2	8	1	
Whooping-cough	286	21	51	35	26	257	5	26	6	7

DEATHS	1958 Eng. & Wales	1958 Lond.	1958 Scot.	1958 N. Ire.	1958 Eire	1957 Eng. & Wales	1957 Lond.	1957 Scot.	1957 N. Ire.	1957 Eire
Diphtheria	0	0	0	0	0	No comparable figures available.	0	0	0	1
Dysentery	1	0		0			0		0	
Encephalitis, acute		0			0		0			0
Enteric fever	0	0	0	0			0	0	0	
Infective enteritis or diarrhoea under 2 years	6	0	0	0	0		0	0	0	1
Influenza	33	3	0	1	0		15	2	0	2
Measles		1	0	0	0		0	0	0	0
Meningococcal infection		0	1				1	0		
Pneumonia	620	59	39	12	0		95	35	16	4
Poliomyelitis, acute	3	0		0	0		0		0	0
Scarlet fever		0	0	0	0		0	0	0	0
Tuberculosis:										
Respiratory	102	8	10	0	3		13	7	2	1
Non-respiratory		1	0	2	1		1	0	0	0
Whooping-cough	1	0	0	0	0		0	0	0	0
Deaths 0–1 year	274	22	42	7	8		24	41	6	8
Deaths (excluding stillbirths)	10,412	815	690	114	149		1051	699	139	122
LIVE BIRTHS	7,917	646	907	106	180		609	892	164	178
STILLBIRTHS	269	18	26				15	38		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

Medical News

Royal College of Surgeons.—Dr. R. F. WOOLMER, director of the Department of Anaesthetics at the Royal College of Surgeons, has been appointed the College's first British Oxygen professor of anaesthesia. The appointment was made by the College council. This chair was endowed last year with a sum of £150,000 by the British Oxygen Company Ltd. Dr. H. J. BRENNAN has been awarded a Joseph Clover lectureship. Sir WALTER MERCER has been appointed Robert Jones lecturer and Mr. H. R. THOMPSON Thomas Vicary lecturer—both for this year.

Oxhey Health Centre.—On January 9 the MINISTER OF HEALTH opened a health centre at the Oxhey L.C.C. Estate in Hertfordshire, which combines services provided by Herts County Council with those of a group practice of five doctors. The latter, aided by the group-practice loan scheme, have built their surgeries next door to the council's maternity and child welfare and other clinics. Speaking at the opening ceremony, Mr. DEREK WALKER-SMITH described the centre as an example and an experiment in close co-operation between family doctors and local health authority services. "The group-practice loan scheme is not intended," he said, "to provide a substitute for health centres. But, since its inception, the idea of group practice has widened considerably, and there are now a number of cases where group practices approach the health centre idea by incorporating certain local health authority services. The Oxhey Health Centre represents the extension of this process into a marriage of group practice and the full range of local authority health services to create a health centre in the full sense of the word."

Hospital Building Programme.—The Ministry of Health is separating its architectural section from that of the Ministry of Housing, and is advertising a new post of Chief Architect to the Ministry. This official will have the tasks of scrutinizing local authority and hospital board building schemes and directing a "design unit" which studies means of improving the planning and construction of hospitals and other Health Service buildings. The salary offered is £3,400 a year. According to a recent Ministerial statement in Parliament (*Journal*, December 27, p. 1599), the proposed expenditure on the capital development of the hospital service in England and Wales will be £22m. in 1959–60 and £25½m. in 1960–1.

Fellowships in Clinical Research.—The Medical Research Council invites applications for a further series of fellowships in clinical research, tenable at centres in the United Kingdom during the academic year 1959–60. These fellowships are open to suitably qualified medical graduates who wish to prepare for a career in clinical research. The aim is to give each fellow an opportunity to study methods of research in the basic subject most relevant to his particular clinical interest.

Awards will be for a period of one year in the first instance, renewable up to a maximum of three years. Stipend will be at the rate of £950 per annum, rising by annual increments of £75 to £1,100 per annum, with superannuation provision in addition. Candidates for these fellowships, which are ordinarily restricted to British subjects resident in the United Kingdom, will be invited to submit their own proposals as to type and place of work, and their applications must be sponsored by the head of the appropriate department in the candidate's university or medical school.

Further details and forms of application may be obtained from the Secretary, Medical Research Council, 38, Old Queen Street, London, S.W.1, with whom applications should be lodged as soon as possible. The last date for applications is March 1.

Training in Psychotherapy.—The Royal Medico-Psychological Association wishes to draw attention to its training scheme for young psychiatrists. The aim is to provide elementary training in short-term methods of psychotherapy. The training offered envisages the supervision of treatment of a small number of cases and discussion of the problems arising in others. The scheme is open to psychiatrists in the provinces as well as in London or other large cities and irrespective of their membership of the R.M.P.A. At present the scheme is run on a voluntary basis and no fee is charged. Further details may be obtained from the Secretary, R.M.P.A., 11, Chandos Street, London, W.1.

Medicine on Television.—The B.B.C. regards medicine as "one of the most important topics" for television and wants the medical profession to continue to help it "in putting on the television screen this most vital subject." This was stated by Mr. CECIL MCGIVERN, deputy director of B.B.C. Television, at a special showing to members of the medical profession of the B.B.C. documentary film "On Call to a Nation" (*Journal*, October 25, p. 1053) at the National Film Theatre on January 7. Six million viewers saw the original telecast on October 22, and they gave it "a level of appreciation that was one of the highest for any programme of the year," according to a B.B.C. survey.

Freeze-dried B.C.G.—Last April British freeze-dried B.C.G. (*Journal*, March 22, 1958, p. 698) was made available to local health and hospital authorities as an alternative to the Danish liquid vaccine for a trial period of nine months. A Ministry Circular (1/59) now continues this arrangement and extends the permitted storage time (under prescribed conditions) from six to twelve months.

New Name for N.A.P.T.—The National Association for the Prevention of Tuberculosis has changed its name to "The Chest and Heart Association." No change of policy is involved, the conquest of tuberculosis remaining the association's primary concern. Increasing attention will be paid to chronic bronchitis, lung cancer, asthma, and cardiac disease.

John Curtin School.—Dr. A. G. OGSTON, F.R.S., reader in biochemistry at Oxford, has been appointed to the new chair of physical biochemistry at the John Curtin School of Medical Research, Australian National University, Canberra.

Birmingham University.—The title of reader in experimental pathology has been conferred on Dr. K. W. WALTON, senior lecturer in this subject. Dr. J. M. BISHOP and Dr. P. C. HARRIS, both lecturers in medicine, have been appointed senior lecturers, and Dr. J. BUTLER, university research fellow in the department of medicine, has been appointed lecturer in medicine.

General Nursing Council for Scotland.—Among the 12 members appointed to hold office for the next five years are the following members of the medical profession: Professor T. FERGUSON (Glasgow), Dr. A. D. BRIGGS (Glasgow), Mr. T. N. MCGREGOR (Edinburgh), Professor D. E. C. MEKIE (Edinburgh), Dr. W. A. MURRAY (North Berwick), and Dr. H. E. SEILER (Edinburgh).

Prize for Edinburgh Graduates.—The Lewis Cameron postgraduate prize (value about £45) will be awarded to a bachelor of Edinburgh University of not more than five years' standing for the best original work relating to diagnosis. Papers must be lodged with the dean of the Faculty of Medicine by April 6.

"Family Doctor."—The January issue includes articles on "Your Small Children and Sex" (Dr. Doris Odlum), handicapped children (Professor R. S. Illingworth), headache (Dr. J. N. Walton), and "sunlamps" (Dr. W. S. Tegner).

Q.P.H.s.—Surgeon Captain J. C. GENT, R.N., and Major-General T. F. M. WOODS have been appointed honorary physicians to the Queen.

Professor J. M. Yoffey, professor of anatomy at Bristol University, has been appointed by the KING OF DENMARK a Knight (first class) of the Order of the Dannebrog, in recognition of his services to the medical schools of the Universities of Copenhagen and Aarhus.

COMING EVENTS

Hunterian Society Lecture.—Sir RUSSELL BRAIN will lecture on "Consciousness and Unconsciousness" at 8.30 p.m. on January 19 at the Mansion House, London.

Institut Français.—Dr. BERNARD HALPERN, director of research at the Centre National de la Recherche Scientifique, Paris, will speak at the Institut Français du Royaume-Uni, Queensberry Place, London, S.W.7, on "Allergie, Maladie d'Aujourd'hui, Fléau de Demain" on January 22 at 8.15 p.m.

Mental Health Bill.—A discussion on the Bill, opened by Sir KEITH JOSEPH, M.P., and Mr. KENNETH ROBINSON, M.P., and arranged by the Psychological Medicine Group Committee of the B.M.A., will be held on January 29 at 11 a.m. at B.M.A. House. Members of the Group and other interested psychiatrists are invited to attend.

Cambridge Postgraduate Courses.—Symposia for general practitioners arranged by Cambridge University Medical School: February 1, 2 p.m., at Addenbrooke's Hospital; February 14, 10.30 a.m., at the Department of Human Ecology. Further details from the Secretary of the Medical School, Tennis Court Road, Cambridge.

"Bronchial Asthma."—Whole-day symposium arranged by the Chest and Heart Association (formerly N.A.P.T.), February 25, at the Royal Society of Medicine, 1, Wimpole Street, London, W.1. Details from the association, Tavistock House North, Tavistock Square, London, W.C.1.

NEW ISSUES

Annals of the Rheumatic Diseases.—Issued four times a year (£3 annually). The new issue (Vol. 17, No. 4) includes:

VARIATIONS IN THE COURSE OF RHEUMATOID ARTHRITIS. P. E. Brown and J. J. R. Duthie.
ANKYLOSIS OF THE FINGER JOINTS IN RHEUMATOID ARTHRITIS. Robert M. Stecher.
CLINICAL OBSERVATIONS WITH 16A-METHYL CORTICOSTEROID COMPOUNDS. Edward W. Boland.
ROSE-WAALER TEST USING A RAPIDLY PREPARED SERUM FRACTION. Douglas Whillans and Andor Fischman.
OSTEO-ARTHROSIS AND DISK DEGENERATION IN AN URBAN POPULATION. J. H. Kellgren and J. S. Lawrence.
TRIAMCINOLONE THERAPY IN RHEUMATOID ARTHRITIS. Jack Zuckner, Robert H. Ramsey, Carlo Caciolo, and George E. Gantner, jun.
NATURE OF ANAEMIA IN RHEUMATOID ARTHRITIS. IV. EFFECTS OF INTRAVENOUS ADMINISTRATION OF SACCHARATED OXIDE OF IRON. J. Richmond, L. M. H. Roy, D. L. Gardner, W. R. M. Alexander, and J. J. R. Duthie.
THE DERMAL BARRIER IN SYSTEMIC SCLEROSIS AND OTHER RHEUMATIC DISEASES. J. Sharp and D. Goldsborough.
PRODUCTION OF L.E. CELLS IN VIVO BY TRANSFUSION OF SYSTEMIC LUPUS ERYTHEMATOSUS PLASMA. George Bencze, Steven Cserhati, Joseph Kovacs, and Tiberius Tiboldi.
ELECTROPHORETIC ANALYSIS OF SERUM PROTEIN IN REITER'S SYNDROME. George W. Csonka and E. Kawerau.
ACTIVATION OF DENTAL INFECTIONS BY CORTISONE. STUDIES IN CHILDREN WITH RHEUMATIC FEVER. R. C. W. Dinsdale and K. S. Holt.
TUBERCULOUS RHEUMATISM. Joan M. Bremner.

Abstracts of World Medicine.—Issued in the first week of each month, this journal contains abstracts of important papers selected from the current medical literature of the world. Annual subscription £4 4s.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Monday, January 19

GUY'S HOSPITAL.—5.15 p.m., Endocrine demonstration by Dr. P. M. F. Bishop: Hypopituitarism.
HUNTERIAN SOCIETY.—At Mansion House, 8.30 p.m., Hunterian Society Lecture by Sir Russell Brain, Bt.: Consciousness and Unconsciousness.
POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Dr. S. Lawson McDonald: Aspects of Atrial and Ventricular Septal Defects.

Tuesday, January 20

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, 5.30 p.m., Professor J. Henry Dible: Pathology of Limb Ischaemia.
INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. E. J. Holborrow: Pathology and Serology of Lupus Erythematosus.
LONDON UNIVERSITY.—At London Hospital Medical College, 5.30 p.m., special university lecture in pharmacology by Professor P. Dell (Paris): Aspects of the Physiology and Pharmacology of the Brain Stem Reticular Formation.
ROYAL ARMY MEDICAL COLLEGE.—5 p.m., Professor E. J. King: Infective Pneumoconiosis.
ROYAL COLLEGE OF PHYSICIANS OF LONDON.—5 p.m., Goulstonian Lecture by Dr. W. S. Peart: Hypertension and the Kidney.
ST. MARY'S HOSPITAL MEDICAL SCHOOL.—At Wright-Fleming Institute Theatre, 5 p.m., Dr. G. L. M. McElligott: Non-gonococcal Vaginal Discharge.
SOCIETY FOR THE STUDY OF ADDICTION.—At Medical Society of London, 8 p.m., joint symposium with B.M.A. Drug Addiction Committee. Problem of Drugs not on the Poison List. Opening speakers, Dr. John Price, M.I. F. W. Adams, Professor C. A. Keele, and Dr. E. C. Cullinan.
SOUTH-WEST LONDON MEDICAL SOCIETY.—At Bolingbroke Hospital, 8.30 p.m., Miss Mary Savory: Eye Emergencies in General Practice.

Wednesday, January 21

FOUNTAIN HOSPITAL.—5.30 p.m., subject: Causes of Mental Defect. Papers by Dr. J. M. Berg and Dr. B. W. Richards.
INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. R. W. Riddell: Fungi as Causative Agents of Human Disease.
INSTITUTE OF DISEASES OF THE CHEST.—5 p.m., Dr. E. H. Hudson: Management of Pulmonary Tuberculosis in the Home.
INSTITUTE OF UROLOGY.—4.30 for 5 p.m., Dr. A. R. Harrison: Metabolic Causes of Calculus Disease.
MIDLAND MEDICAL SOCIETY.—At Selly Oak Hospital, 8.15 p.m., clinical meeting.
OXFORD UNIVERSITY.—At Radcliffe Infirmary, 5 p.m., Litchfield Lecture by Professor H. L. Sheehan: Post-partum Hypopituitarism.
POSTGRADUATE MEDICAL SCHOOL OF LONDON.—2 p.m., Wing Commander J. K. Mason: Role of the Pathologist in Accident Reconstruction.
ROYAL SOCIETY OF HEALTH.—2.30 p.m., Miss Alice Bacon, M.P., and Mr. W. H. Wattleworth: Health of Workers in Non-industrial Premises.
WILLESDEN GENERAL HOSPITAL MEDICAL SOCIETY.—At Department of Physical Medicine, Willesden General Hospital, 8.45 p.m., Mr. T. G. I. James: Spinal Tumours.

Thursday, January 22

BRITISH POSTGRADUATE MEDICAL FEDERATION.—At London School of Hygiene and Tropical Medicine, 5.30 p.m., Professor A. D. M. Greenfield: Regulation of the Blood Vessels in the Limbs.
INSTITUTE OF DERMATOLOGY.—5.30 p.m., Professor T. B. Fitzpatrick: Biology of Melanin.
INSTITUTE OF NEUROLOGY.—5.30 p.m., Professor P. Dell (Paris): Recent Advances in the Physiology of Wakefulness.
LIVERPOOL MEDICAL INSTITUTION.—8 p.m., Dr. Winston Evans: The Histogenesis of Ovarian Tumours.
LONDON UNIVERSITY.—At King's College, Strand, W.C., 5.30 p.m., special university lecture in human anatomy and morphology by Dr. B. N. Halpern (Paris): Functions and Role of the Reticulo-endothelial System in Immunological Processes.
ROYAL COLLEGE OF PHYSICIANS OF LONDON.—5 p.m., Goulstonian Lecture by Dr. W. S. Peart: Hypertension and the Kidney.
ROYAL COLLEGE OF SURGEONS OF ENGLAND.—5 p.m., Hunterian Lecture by Professor J. W. Dickson: Pathological Ossification in Nervous Disease, with Special Reference to Traumatic Paraplegia.
ST. ANDREWS UNIVERSITY.—At Physiology Department Lecture Theatre, 5 p.m., Dr. R. Leishman: Retinal Changes in Hypertension and Arterio-sclerosis; Their Diagnostic and Therapeutic Significance.
ST. GEORGE'S HOSPITAL MEDICAL SCHOOL.—5 p.m., Sir Paul Mallinson: psychiatry.
UNIVERSITY COLLEGE LONDON: DEPARTMENT OF BIOCHEMISTRY.—At Physiology Theatre, Gower Street, W.C., 5 p.m., public lecture by Professor F. G. Young, F.R.S.: Hormones and Metabolic Processes—(1) General Considerations.

Friday, January 23

BIOCHEMICAL SOCIETY.—At Department of Chemistry and Biochemistry, St. Thomas's Hospital Medical School, S.E., 2 p.m., 379th meeting.
INSTITUTE OF DERMATOLOGY.—5.30 p.m., clinical demonstration by Dr. H. J. Wallace.
INSTITUTE OF DISEASES OF THE CHEST.—5 p.m., Dr. N. C. Oswald: clinical demonstration.
INSTITUTE OF LARYNGOLOGY AND OTOLOGY.—3.30 p.m., clinical discussion for general practitioners. Mr. S. E. Birdsall: Chronic Ear Discharge.
POSTGRADUATE MEDICAL SCHOOL OF LONDON.—(1) 10 a.m., Mr. R. B. Welbourn: Surgical Treatment of Cushing's Syndrome and Adrenocortical Failure in Surgery. (2) 4 p.m., Dr. Paul Beeson (Yale): Urinary Tract Infections.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Harry.—On January 9, 1959, at the North Hertfordshire Hospital, Hitchin, to Pauline, wife of Dr. T. V. A. Harry, twins—Philip and Wendy.
Staniland.—On January 2, 1959, at Thames, New Zealand, to Shelagh (formerly Mathias), M.B., B.S., D.A., and Gerald Cedric Staniland, M.B., Ch.B., F.R.C.S., a second daughter.

DEATHS

Brewer.—On November 29, 1958, at 30, Westminster Drive, Wrexham, Denbighshire, Frederick Leslie Brewer, M.B., B.S., late of Tonyrefail, Glam.
Carleton.—On December 26, 1958, at the Red House, Bedfont, Middx, Mayherry Hugh Carleton, L.R.C.P.&S.Ed., L.R.F.P.S.
Crawford.—On December 29, 1958, Barbara Grace Rutherford Crawford, M.B.E., M.B., Ch.B.
Hinds-Howell.—On December 27, 1958, at 3, Moor Park Road, Northwood, Middx, Mabel Dalton Hinds-Howell, M.B., Ch.B.
McDonnell.—On December 23, 1958, at 15, St. John's Road, Sidcup, Kent, Edmond McDonnell, D.S.O., M.B., B.Ch., Colonel, late R.A.M.C. (retired), aged 83.
Pearson.—On December 26, 1958, at Falkirk and District Royal Infirmary, John Pearson, M.B., Ch.B., of Glenbo House, Bonnybridge, Stirlingshire.
Pring.—On December 25, 1958, at 14, Royal Crescent, Brighton, Sussex, Horace Reginald Pring, M.R.C.S., L.R.C.P., L.D.S., aged 89.
Walker.—On December 20, 1958, at Prestwood House, Stourbridge, Worcs, George Laurie Walker, M.B., Ch.B.
Wasson.—On December 31, 1958, in New York, U.S.A., Valentina Pavlovna Wasson (formerly Guercken), M.R.C.S., L.R.C.P.

Any Questions ?

We publish below a selection of those questions and answers which seem of general interest. It is regretted that it is not possible to supply answers to all questions submitted.

Post-operative Pain

Q.—*What are the methods at present available for ensuring the minimum of pain and discomfort after a major lower abdominal operation on a patient who is allergic to morphine? The patient suffers major side-effects from methadone.*

A.—True allergy to morphine in the form of urticaria, skin rashes, and pruritus is not unknown but is relatively uncommon compared with the patient who is over-sensitive and is made distressed by the side-effects of the drug, such as nausea and vomiting. In view of the statement that the patient "suffers major side-effects from methadone" it is probable that she is in the latter category, and, if so, is likely to react in this manner to any effective analgesic. Pethidine (100 mg.) is a suitable pre-operative drug which has certain advantages over morphine, and it is also effective in relieving post-operative pain. Levorphanol (methorphinan) is another synthetic analogue of morphine which could be used in a dose of 2–6 mg. In an attempt to minimize the possible unpleasant side-effects of these drugs they could be given along with one of the tranquillizers, such as promazine (50–100 mg.) or reserpine (0.5–1 mg.). Alternatively the latter drugs might be tried alone, thus avoiding the morphine group of drugs altogether. Finally it might be suggested that this is the type of patient in whom medical hypnosis might be effective.

Double Bondage

Q.—*What is the significance of the △ in the chemical descriptions of the prednisteroids? Has it anything to do with the position of the carbon atoms in the benzene ring?*

A.—The symbol △ in the description of steroids refers to the presence of an unsaturated double bond in the molecule. Strictly speaking it should be followed by a number to indicate between which carbon atoms the double bond exists. Most of the biologically active adrenal steroids have a double bond between carbon atoms 4 and 5, but only the first number is quoted in the formula, viz. Δ^4. In prednisone and prednisolone there is an additional double bond in the A ring and it is between carbon atoms 1 and 2. Although it may be permissible to refer to these compounds as Δ^1 cortisone and Δ^1 cortisol, it is better to avoid the term "the △ steroids."

Marriage of Epileptics

Q.—*What advice should be given to a girl of 25 suffering from epilepsy about the advisability of getting married to another epileptic? Both suffer from grand mal, starting in the late teens.*

A.—Epilepsy is probably not a genetic entity, so that the type and degree of genetic determination probably differ from family to family, and some regard must be paid to the family history. However, large-scale studies, chiefly Scandinavian,[1 2] show that in general the risk to the children of an epileptic of themselves developing epilepsy (excluding those who have fits only in the first three years of life) is 3–4%. The comparable risk for a child at random is about 1%. There is little information about the risks to children when both parents are affected; but, since there is no reason to suppose that recessive genes are concerned, the risk will probably only be doubled and so be of the order of 6–8%. Accordingly, if there are no special features in the family history, this couple should be advised that there is a real, but not a high, risk of any children they have developing epilepsy. Apart from answering the couple's queries on the genetic risks, the family doctor will also need to discuss the social risks to the children, unless the epilepsy in the parents is well controlled.

REFERENCES

[1] Alström, C. H *Acta psychiat.*, 1950, suppl. 63.
[2] Harvald, B., *Heredity in Epilepsy*, 1954. Copenhagen.

Working After 60

Q.—*Is there any statistical evidence to show that working after the age of 60 shortens life?*

A.—I know of no study which has compared the expectation after the age of 60 among those who work and those who have retired. Such a study would be almost impossible to organize with any chance of getting meaningful results. This is because people do not retire "at random." There is little doubt that the expectation of life of all people who no longer work after 60 is considerably shorter than those who continue to work, simply because many of the former group will have retired because of ill-health. It is obviously impossible to "randomize" retirement, because so many economic, social, physical, and mental factors all play their part in deciding whether a man should retire or not.

NOTES AND COMMENTS

Intestinal Hurry.—Dr. W. W. KAY (Epsom, Surrey) writes: May I supplement your answer to the question about the treatment for intestinal hurry ("Any Questions?" October 4, p. 868)? Some cases of intestinal hurry are associated with achlorhydria and respond very promptly and satisfactorily to moderate doses of hydrochloric acid with meals. In all cases, as in mucous colitis, it is worth while investigating gastric acidity, especially as the tubeless test meal is readily available.

OUR EXPERT replies: Many conditions occur in patients who have achlorhydria, the criteria for which have often been lax. There is no reliable evidence that achlorhydria plays any part in the causation of diarrhoea, which is uncommon, for example, in pernicious anaemia. Mucous colitis is an uncertain entity itself and has no proved relation to achlorhydria. The tubeless test meal is not always reliable, and it is not truly quantitative.

Corrections.—Dr. P. E. C. MANSON-BAHR writes: I have to point out that there is an error, which may be serious, about the dose of the inoculum of trypanosome-infected rat's blood in the third paragraph of the paper by R. B. Heisch, J. P. McMahon, and P. E. C. Manson-Bahr on the subject of "The Isolation of *Trypanosoma rhodesiense* from a Bushbuck" (November 15, 1958, p. 1203). The dose of inoculum is given as 25 ml., whereas the correct one used was 0.25 ml., following the technique originally set down by Sir David Bruce 47 years ago.

We regret that owing to a printer's error the ferrous iron equivalent of each "plesmet" tablet was listed as 30 mg. in "To-day's Drugs" (January 10, p. 111) instead of 50 mg.

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